

THE SCOTTISH MOTOR SHOW



Enlarged
Issue

VOL. LXXXII No. 2113

[Registered at the G.P.O.
as a newspaper]

LONDON, NOVEMBER 14, 1959

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MC 41

Austin announce an entirely new range of vehicles specially designed to cut driver fatigue...

...industrial research Professor shows these vehicles cut fatigue by nearly two-thirds

AUSTIN DESIGNED THIS NEW 2-4 TON RANGE FROM THE DRIVER'S VIEWPOINT. The cab gives clearer driving vision, clearer parking vision. Gives a really relaxed driving position. But above all it reduces that most tiring aspect of short haul work—the climbing in and out.

Mountainclimbing or strolling home. Tests were carried out on these new trucks by one of Britain's leading Industrial Research Units. The Professor in charge measured in-and-out fatigue against a conventional forward control vehicle of the same weight. AND PROVED CONCLUSIVELY THAT THIS NEW AUSTIN RANGE CUTS FATIGUE BY JUST ON TWO-THIRDS ...MAKES THE DIFFERENCE IN DRIVER FATIGUE BETWEEN FEELING AS IF YOU'D CLIMBED A MOUNTAIN OR STROLLED HOME AT 3 MPH!

To drivers—this range means better working conditions—safer driving. Two-thirds less fatigue is no small matter

to a man at the wheel all day. But there's more to these new trucks. They also provide bigger loading decks with improved weight distribution—easier, less strain, on and off loading. Petrol or diesel engine for maximum pulling power (less gear work). Sweeping cab improvement in a wider-vision wrap-around screen and special parking portholes.

Now check the pictures for yourself. Below is the full picture story report of the fatigue test. Elsewhere pictures show you the great visibility, manoeuvrability, etc.: Points which the Professor also tested and which give significantly better results. So—please read on . . .



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This is the new cab on the new Austin 2, 3 and 4 tonners. Note the rear angle door position, the low-slung step, the observation car view, the low parking portholes and swivelling side windows. PRICES : 2 ton from £750; 3 ton from £815; 4 ton from £880.

THE IN-AND-OUT TEST

Most fatigue-reducing feature in the new cab—ease of entry, (wide low footrest and two steps only to the seat). On fatigue tests carried out by the Professor i/c Britain's leading Industrial Research Unit, drivers, wearing oxygen masks, spent a total time of 3 minutes, under controlled conditions, stepping in and out of new and old cabs. Instruments recorded their rate of breathing, the energy used being expressed in terms of Calories. With the old cab 10.1 Calories per minute were expended—equivalent to climbing a mountain. With the new cab, 3.4 Calories per minute resulted—equivalent to a walk along the flat at 3 m.p.h. Tests also showed that in the new cab all drivers expended approximately the same energy. In the old cab a young fit man approximated 6 Calories per minute but for a man over 50 the rate was 14.6; equivalent to carrying $\frac{1}{2}$ cwt. up a 1 in 3 hill. The test drivers were unanimously in favour of the new cab. "It's a wonderful improvement," they said. "We're glad that someone has at last designed a cab with the driver in mind."



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THE SCOTTISH MOTOR SHOW

EXHIBITS
AT
KELVIN
HALL

See Page 3



VOL. LXXXII No. 2113

[Registered at the G.P.O.]

LONDON, NOVEMBER 14, 1959

SCOTTISH
INDUSTRY
FOR
TRANSPORT

See Pages 5, 9 and 29

PRICE NINEPENCE

Scottish Motor Industry

THE vigour of the Scottish motor trade is well exemplified this week in the display now open at Kelvin Hall; items of commercial application are described elsewhere in this issue. Chassis manufacture in Scotland is now limited to one powerful and highly efficient commercial vehicle builder—Albion—which has gained in strength from association with a Sassenach group of high repute. Albion began with the new century, but parallel with it there were formerly a number of chassis makers in Scotland. Arrol-Johnston, of Dumfries, at one time headed by Sir William Beardmore, built cars as did Albion, but among bus chassis produced an incredibly solid fleet for the Great Eastern Omnibus Company of London; they were just being replaced by lightweight Straker-Squires when the L.G.O.C. bought the Great Eastern undertaking in 1911, but some became the first L.G.O.C. T class. Between the wars the name Beardmore appeared on lorry chassis and, of course, on taxicabs, which still are made under that mark, although no longer north of the Border. The Caledon chassis built by Scottish Commercial Cars Co., Limited, of Glasgow, had a considerable vogue and some railway applications as well; the Clyde was a shorter-lived rival. The Halley probably persisted longest of those that disappeared; Halley's Industrial Motors, Limited, took shape in 1906 from the Glasgow Motor Lorry Co., Limited, and some of the extensive Albion works is in shops originally built by Halley. Scotland provides many services to the commercial vehicle trade besides chassis building; the new bus and coach body shops of W. Alexander and Sons (Coachbuilders), Limited, were described as recently as our September 19 issue and there are the special services of Thomas Thomson Sons and Co. (Barrhead), Limited, with tarpaulins and the attractive permanent decorative material for ceilings, body linings and seatbacks, etc., Alhambrinal; firms such as Young Windows and two tyre companies—India at Inchinnan and North British in Edinburgh.

Paying for Travel

FARE structures—air, rail and road—with their variations designed to encourage maximum public demand, formed the subject of a symposium of three interesting papers presented last Monday to the Institute of Transport. Confining himself to domestic routes (i.e. within the United Kingdom), Dr. J. L. Grumbridge, general manager (commercial), British European Airways, pointed out that these were an integral part of the whole system, their traffic flows being an important contribution to the loads on international flights. Social services such as those to the Highlands and Islands incurred an unavoidable loss of over £300,000 a year and, as regards the holiday routes, however accurate the fares structure, there was something like a 20 to one variation in traffic between summer peak and winter trough; low fares at any time of the year were therefore almost impossible. The main trunk routes were a different proposition and promotional fares devices were obtaining a greater winter load and enabling the ironing out of relatively small valleys. Costs were more evenly spread throughout the year and it was hoped within a relatively short time to get these routes on to a truly profitable basis. The domestic air fares structure was in fact in a constant state of development. Pointing out that consumer expenditure on public transport was less than half the total, the other half being on private motoring, Mr. A. M. Tait, assistant general manager, Eastern Region, B.R., said that not much more than 10 per cent was spent on rail alone. The railway fares structure was going through an evolutionary process, constant adaptation being necessary if rail passenger services were to survive in a changing world.

Charges by Rail and Bus

IN former days excursion fares were subject to the greatest variation; today, according to Mr. Tait, fares on the local provincial services no longer have any definite relation to the rest of the structure. Competing bus fares are the criterion, and

CURRENT TOPICS

development is in pace with conversion from steam to diesel operation; there is no arbitrary arithmetical scale—public demand, road competition and rail costs are the deciding factors—and all the three are assessed on purely local circumstances. Mr. Tait believes that the relative merits of rail travel in respect of speed, convenience, comfort and safety may well be underlined by growing congestion of road and, eventually, air transport. Increasing decentralisation may, he thinks, assist in the development of economic and attractive charges and local managers might well be given more responsibility for fixing fares. On the road side Mr. A. F. R. Carling, an executive of the British Electric Traction Co., Limited, explained that the 4,500 public service vehicle owners in this country neces-

system. Leeds used the 4 ft. 8½ in. gauge; neighbouring Bradford had 4 ft. gauge tramways, but an ingenious splined-axle gauge-widening apparatus enabled through cars to be run via Stanningley from 1909 to 1914, after which maintenance troubles under wartime conditions caused it to be dropped. The names of recent managers, Chamberlain (afterwards Sir William), Vane Morland and Alec Findlay, are associated with notable rolling stock developments. Large bogie cars became desirable with the provision of reserved track lines such as that to Middleton; with the exception of the experiments with modern units conducted by Mr. Findlay, however, recent needs have been met by secondhand vehicles from Hull, Manchester and London, the latter including HR2 and

one was passing were not stationary but running flat out at 40-45 m.p.h. Incidentally, only half a dozen or so cars, most of them high-powered, succeeded in catching the coach, which at times attained 80 m.p.h. The 65 miles of motorway proper were covered in 59 min., the 30 miles from Digbeth to its commencement took 46 min. (comment about the practicability of a 40-m.p.h. speed limit for p.s.v.s. seems superfluous), but from Park Street Junction to Victoria, a distance of 21 miles, occupied 66 min. in midday London traffic. Overall there was a gain of 34 min. on the schedule, but this will not necessarily be repeated on public journeys. To have spent longer on the final stretch than on the 65 miles of motorway pinpoints the urgency of pressing on with the proposed Marble Arch motorway. The saving of time would clearly be out of all proportion to its modest length.

Antipathy to the Motorway

ONE aspect of Britain's first motorway which may have been overplayed is the measure of its appeal to commercial vehicle drivers. Time being of the essence of the contract, coach operators have not been slow to take advantage of the London-Birmingham direct route; but what about road hauliers? A television inquiry the other evening surprisingly indicated that this prodigious product of the motor era is by no means popular amongst lorry drivers. Several who were questioned by an on-the-spot reporter evinced a marked preference for A5, the trunk road which the motorway was designed to relieve. Among the reasons given for this attachment to the old road were absence from the new highway of transport cafés and laybys, allowing brief respite on a long run, with the need for maintaining uniform speeds and the resultant monotony. More than one driver said he preferred the more intimate A5 because of its twists and turns which were claimed to add zest to driving. All but one said they were accustomed to the old road and preferred to go on using it. How long this feeling will last one cannot say, but most of the men spoken to were middle-aged and their views may not be shared by the younger drivers. The opinions expressed are certainly interesting and point a moral which time may reverse; they may be partly due to the Britisher's aversion to change. Of one thing there is little doubt—that lorry driving, even on A5, will become more pleasant and less exacting because of the seductive attractions of M1 to the drivers of passenger vehicles—both private and public. Then, too, the approaches to the motorway from the London end are not entirely suitable for trunk lorries, most of which draw their loads from East or South-East London. The detour off the A5 at London Colney to proceed via the St. Albans by-pass may seem a little pointless. Owing to hazards one haulier, operating the lighter type of vehicle and who has sustained damage, this week forbade its drivers to use M1. But it would be a thousand pities if operators generally felt that the motorway held some kind of evil spell for them; its supreme value in commercial use lies not in maximum speed but in the high average speed which it makes possible over a long distance.

Tramless Leeds

REMOVAL of tramway service from Leeds leaves Blackpool, Douglas, Glasgow and Sheffield the only towns in the United Kingdom with street tramway services; of those, Douglas provides a holiday attraction with horse cars for Isle of Man visitors and Glasgow and Sheffield are proceeding rapidly towards the tramless state of Leeds. The truncated Grimsby and Immingham Light Railway now works in peak hours only, mainly upon its own right of way; the Swansea and Mumbles, with 106-seat tramcar type vehicles, is to end with the passing of 1959 and in any event is technically a railway, the first in the world, indeed, to carry regular passengers. Some notable events are associated with tramways in Leeds. Steam traction began experimentally as early as 1877, before the Act of 1879 authorised mechanical traction generally on street tramways. The Roundhay Park line was electrified by Graff-Baker and inaugurated on October 29, 1891, with Thomson-Houston equipment. Then came the lawsuit with the National Telephone Company which for a time jeopardised the right to use an earth return for traction current. In 1897 Leeds was the first municipality to electrify its own

90 Feltham types. Trolleybuses were operated by Leeds on light traffic routes from 1911 to 1928, these including at least one double-decker built in 1921 to a singularly ugly design; it was eventually decided that the motor bus, which had been introduced first on October 30, 1913, could handle such traffic best. With the postwar diesel bus available it was not a far cry to decide upon an all-bus city in 1953. The execution of the idea has, however, been accelerated; November 7, 1959, is some five years ahead of the original target date.

Engineered for the M1

IF all the vehicles which have been taken on the M1 motorway during the first fortnight of its life had been as adequately engineered and as skilfully piloted as the special 34-seat Midland Red coaches which now use it to cover Birmingham (Digbeth) and London (Victoria) in 3 to 3½ hours, the dailies would have been cheated of a lot of (to them) good hot material. There would have been no stories of engines dropping out of overdriven or ill-maintained cars, no examples of reckless indiscipline on the part of drivers—only the fog to report, and we do not know yet whether the emergency police arrangements were fully brought into effect to avert the multiple accident near Watford Gap. Nor, of course, do we know how many accidents occurred on the old A5 during that foggy morning. No engines will fall out of the Midland Red C5 coaches because the prototype did 10,000 miles on the high-speed circuit (normally barred to heavy vehicles) at M.I.R.A. and all the drivers have been round on the track, too. Perhaps it was because of the splendid engineering design (described in our October 31 issue) and the seasoned driving, but the 2 hr. 51 min. trip we did from Birmingham seemed almost an anti-climax until one realised that the lorries

An Enduring Metal

IN promoting its policy to disseminate information on lead, the Lead Development Association is manifestly conscious of its responsibility to foster good public relations and to offer a service to individuals and bodies having an object to improve knowledge, but not requiring to be involved in technical detail. To meet the demands of this section of the community, which vary from those which are satisfied by the normal technical services of L.D.A., an attractive film has been produced. Copies may be borrowed free of charge on application being made to the Lead Development Association, 18 Adam Street, London, W.C.2. Intended to interest non-technical audiences, the film has been designed to offer general information on lead. After briefly tracing its history and ancient usage, there is a description of the metal's occurrence in the world today and how it is mined, smelted and refined.

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NEW COMFORT, new power and new running economy are built up into this fine new range of forward control Commers. A wide-vision cab, a new six-cylinder diesel engine with chrome-plated cylinder bores, superlative engineering craftsmanship to give sturdy, long-lasting reliability—all backed by the superb Rootes service organisation.

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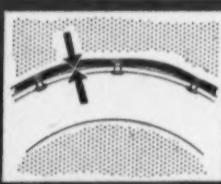
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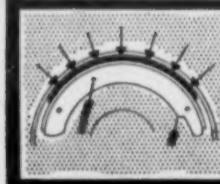
4 They save you garage time by being perfectly simple to fit



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The Editor is prepared to consider contributions offered for publication in MODERN TRANSPORT, but intending contributors should first study the length and style of articles appearing in the paper and satisfy themselves that the topic with which they propose to deal is relevant to editorial requirements. In controversial subjects relating to all aspects of transport and traffic this newspaper offers a platform for independent comment and debate, its object being to encourage the provision of all forms of transport in the best interests of the community.

We desire to call the attention of our readers to the fact that Russell Court, 3-16 Woburn Place, London, W.C.1, is our sole London address, and that no connection exists between this newspaper and any other publications bearing somewhat similar titles.

Spending on Transport

VISITING some of London's Southern Region termini last week to see for himself how the homegoing rush is handled, the Minister of Transport is reported to have let on that he was "enjoying himself immensely—having grand fun." He had thrown out some energetic solutions to perennial problems, such as buildings or car parks over stations to save the walk to and from the station and said: "Every problem has some solution if you face up to it." All this is in line with the popular belief that the new Minister is "going places" in a big way; the change wrought in the fortunes and in the status of the Ministry has indeed been wondrous to behold since it was accorded Cabinet rank. Think big is obviously Mr. Marples's motto—it looks as though he intends to spend big, too, if given half a chance. Measured against these prospects the debate in the House of Lords last week on transport was a disappointing and inadequate affair. Lord Lucas, who raised the subject, perhaps bit off more than he, or other members, could chew when he essayed to review the adequacy or otherwise of the roads programme and of the railways to meet an expanding economy. If the two subjects were discussed in isolation that was not perhaps to be wondered at in a society which has largely ceased to think of transport in the round, i.e. how to develop each mode of transport to the best advantage—today we tend always to think of each in isolation, to have regard to its more obvious merits and to capitalise them. In consequence, we see public carriers, road and rail, nearing a head-on collision in their eager appetite for a larger slice of the cake which is not that much bigger.

A Director of Road Construction

AS his text Lord Lucas took the estimates arrived at by the conference of civil engineers in 1957 that a highway system commensurate to the needs of this country could not be secured for less than £3,500 million—that, incidentally, was based on 1957 traffic estimates. How to tackle the problem? There was only one way as he saw it—to replace the present piecemeal, year-by-year, handout from the Treasury by long-term financial backing. Taking a five-year minimum period at the outset, he foresees an expenditure of £150 million in 1960-61, rising to £325 million a year at the end of the period; i.e. a total expenditure during that time of £1,120 million. If the present rate of vehicle growth continued taxation yield would, he estimated, rise from £500 to £750 million in the next five years. In fact, the Government had no choice in the matter—the alternative was creeping stagnation. With the financial juggling that went on at the moment the Ministry was hamstrung, with the result

that we now had trunk roads that started or ended nowhere. The Treasury Solicitor and the Ministry of Transport could not co-operate effectively over conveyancing and land purchase because neither knew where they were going from one year to another. The way out of inter-departmental difficulties and delays in sanctioning new roads was to appoint a Director of Road Construction, directly under and responsible to the Minister of Transport. He would see that road plans were progressed vigorously. Lord Lucas was emphatic that this should not be a civil servant, but he did not explain who but the Minister could pay his salary.

A Drastic Code for Our Cities

WE are all highway engineers and traffic experts, if it comes to the push. Lord Lucas is clearly no exception. He proceeded to elaborate a series of measures which in his view were inevitable if urban thoroughfares were to be kept open for their proper purpose of passing traffic. No loading or unloading between 8.30 a.m. and 6.30 p.m. along any main road; comprehensive one-way systems, and no right turns; no bus stops within 200 yd. of a congestion zone; compulsion on local authorities to provide off-street parking, with borrowing powers to enable them to do it; each town to have its own traffic engineer; abnormal loads to be excluded from towns during the day. These are drastic measures, and he was frank to admit that they would need a good deal of working out. One ventures to suggest that success, so far as it lies within our grasp, can only come from an application of all these and other remedies, including road improvements, and a chance for public transport to play its part. Merely to inflict hampering regulations on the public carrier or the bus operator by Lord Lucas's sweeping methods is to promote the very evils he essays to remedy. If there is to be a change in the direction of the road programme it must be towards improvement of urban thoroughfares but not at the expense of motorway construction. Above all, we need to speed up the rate at which urban projects are carried through. Those of us who travel about the metropolis know that relatively minor schemes, such as the roundabout lately constructed at Highbury Corner, a notorious black spot, can effect a miraculous change in conditions. We must create conditions in which public transport, and this means especially the buses, can operate with reasonable efficiency; we must also create a public opinion which gets bus and train fares in perspective. It is no use freeing the streets for the buses if, outside the peak periods, passengers continue to desert them.

The Bogey of Wasteful Competition

MUCH of what Lord Burden had to say in defence of the railways was devoted to the charging handicaps under which they still labour. He wanted to see the Transport Tribunal abolished so that the B.T.C. might have the same flexibility as any other commercial enterprise. Of course, the Tribunal has functions other than those concerning railway charges. It was left to Lord Lucan to knit together the rather loose strands of the debate; transport in this country was not a problem of motor roads, railways (surface or underground), it was a problem of transport on the national scale. We had enormous sums invested in our transport assets, both static and moving. However prosperous we might be growing, we did not have so much in hand in the economy that we could afford to waste any of those assets. But we were wasting them because there was transport which was not being fully used. (One assumes that the speaker has realised the possibility of road vehicle assets also going unused if, for example, C-licences were forced to transfer their traffic to rail.) The Government task was to see that all our assets were put to the fullest use in the interests of the country's economy as a whole. For years road hauliers, and latterly ancillary users, have been charged with introducing wasteful competition in the shape of additional vehicles; we now have the intriguing spectacle of the railways vastly improving their traffic-getting potential. All the signs are that we are going to experience in full measure the surplus of resources which Lord Lucan deplores. In fact, the head-on collision to which we referred earlier may be averted only if the two contestants swing their attention to the more profitable task of setting out to regain from the C-licencee so much of his traffic as good service and attention to requirements will secure.

MODERN TRANSPORT has an arrangement with Reuter's Trade Service whereby publication is made in this newspaper of all essential news from all parts of the world concerning traffic and transport by rail, road, sea and air and allied interests.

NEWS SUMMARY

THE Scottish Motor Show was being opened by the Earl of Selkirk, First Lord of the Admiralty, in Kelvin Hall, Glasgow, on October 13. Exhibits include more than 150 commercial vehicles. (See page 3 et seq.)

Twelve members of a team representing a cross-section of the road transport industry in India visited British Road Services in the course of a round-the-world tour studying operational methods.

Mr. Geoffrey Wilson, M.P., has regained the chairmanship of the Conservative Parliamentary Party transport committee.

Thornycroft shareholders are being told that the company intends to concentrate increasingly on the output of maximum capacity, four-, six- and eight-wheelers, and special-type vehicles.

British European Airways is revising fares next summer on its services to the Channel Islands. The aim is to encourage travel away from the Saturday peaks of July, August and early September. (See page 17.)

Statutory Instruments by the Government of Ireland authorise the abandonment by the County Donegal Railways Joint Committee of railway services as from January 1, 1960. For the time being the replacement services will be maintained with hired vehicles.

Orders have been placed with British Railways works for a substantial number of diesel train sets. They include both diesel mechanical and diesel-electric units. (See page 32.)

The last trams were operated in Leeds on November 7. This was some five years ahead of the original target date for completion of the conversion.

A range of new multi-fuel engines specially designed for use in military vehicles was shown this week at the Fighting Vehicles Research and Development Establishment at Chobham. Based on three cylinder sizes, the engines are all of the opposed-piston two-stroke type, ranging in output from 30 b.h.p. to 700 b.h.p. The War Office now requires all operational vehicles to have "omnivorous" engines. The vehicles seen ranged from a Land-Rover to a Foden eight-wheeler.

COMMERCIAL VEHICLES AT KELVIN HALL

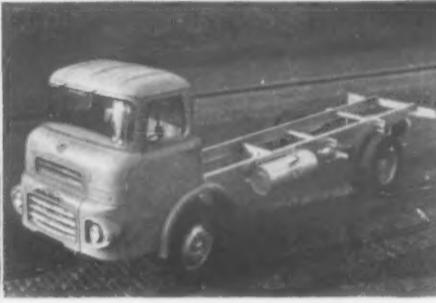


Scottish Industry Well Represented

NEW SIX-WHEELERS FROM ALBION AND THORNYCROFT

MANY road transport-minded visitors from south of the border and from overseas will inevitably be attracted to Glasgow this weekend and during the coming week, both for the pleasure of meeting again their many Scottish friends and contemporaries in the industry and for the intrinsic value of the Scottish Motor exhibition itself, which every

test report on pages 15 and 26 of this issue. The new Chieftain follows closely the general design of the Series I chassis but its range of application has been extended by an increase of permitted gross weight from 10½ to 10¾ tons and by the introduction of additional wheelbase lengths, three for haulage and three for tractor or tipping work, making six models in all instead of four as previously. Principal change in the Series II



Easy-access-cabs: New B.M.C. FG cab with doors in rear quarters fitted to Series 4 2-ton Austin and Morris-Commercial vehicles and, right, standard Albion cab with easy stepwells built into cab floor fitted to Series 2 Chieftain

second year forms the only general exhibition of commercial vehicles in the United Kingdom. This year's exhibition, which is the 42nd of the series organised by the Scottish Motor Trade Association, was opened at Kelvin Hall by the Earl of Selkirk, First Lord of the Admiralty, on November 13 and it remains open until next Saturday evening, November 21.

As well as over 200 private cars and the exhibits of component and accessory manufacturers, there are 150 commercial vehicles, representing every British chassis manufacturer, many of them bodied by Scottish coachbuilders. The Scots are justly proud of their part in the development of a British motor industry and, as on the last two occasions, a complementary

Chieftain is the engine, a newly developed version of the lusty Albion 5½-litre four-cylinder diesel, which now has a nitrided crankshaft and easily renewable strip bearings and develops 94 b.h.p. at 2,200 r.p.m. and 252 lb./ft. torque at 1,250 r.p.m. It also embodies the C.A.V. DPA distributor fuel injection pump with hydraulic governor, which gives exceptionally good cold starting, smooth running and excellent fuel economy, and rearranged auxiliaries to simplify maintenance.

New Units On Show

Also on the Albion stand is an example of the Claymore underfloor-engined 5-tonner fitted with standard three-man cab and large box-van body; an example of the new Chieftain diesel engine coupled to a six-speed overdrive gearbox; and a sectioned Albion double-reduction driving axle



Viewed from both sides the Daimler Mark VIII 8.6-litre diesel in the CVD 6-30 double-deck chassis reveals the dual exhaust arrangement readily adaptable for turbocharger fitting and, right, the large-diameter induction pipe and pre-cleaner drawing cold air from the side of the radiator

exhibition covering motoring history has been organised by the Glasgow Museum and Art Galleries department. Housed in the city's Art Gallery and Museum, on the opposite side of Argyle Street to Kelvin Hall, this exhibition includes a display of historic motor vehicles and a remarkable collection of some 300 books covering practically every aspect of motoring history.

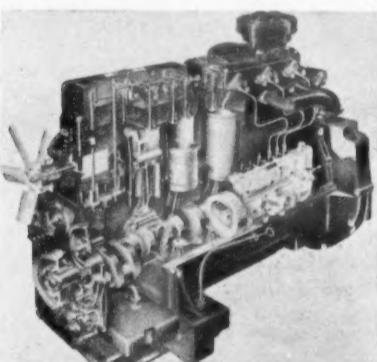
Scottish Contribution

Centrepiece of the collection of early motor vehicles is a Scottish product, an Argyll voiturette of late 1900 or early 1901 vintage, which has just been completely restored by the museum authorities. The Historical Motoring Exhibition remains open until November 28, but Glasgow's

is giving such a good account of itself in various Albion and Leyland heavy-duty vehicles. Albion vehicles can also be seen on Stand 121, where Millburn Motors, Limited, shows a Leyland-powered Clydesdale tractor designed for a gross weight of 18 tons, and on Stand 126, where Walter Alexander and Co. (Coachbuilders), Limited, has an Albion Nimbus underfloor-engined chassis on display fitted with Alexander 29-seat body.

A.E.C. Double-Reduction Axle

The wide range of goods and passenger chassis produced by A.E.C., Limited, is represented on Stand 116 by two of the company's best sellers, a Mercury Mark II lorry for 14 tons gross in the colours of Allison's Transport and an Alexander-bodied Reliance single-deck coach in the green and cream livery of Scottish Omnibuses. These vehicles



Two sectioned units seen on the A.E.C. stand—a working AV690 diesel engine and, right, the double-reduction rear axle fitted to Mercury goods chassis

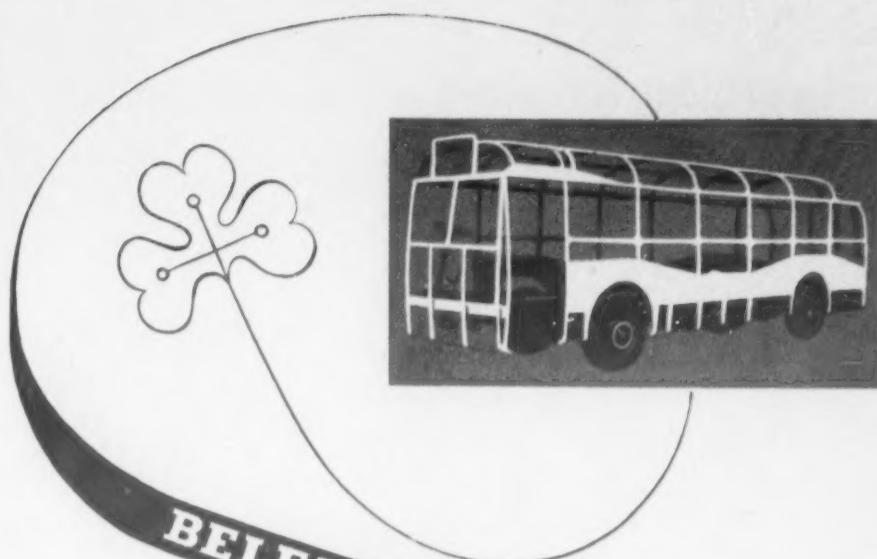
interest in the subject is evident from the fact that a few veteran vehicles are always on show in the technology section of the Art Gallery and Museum. Most important of these, not unnaturally, are all from Scottish factories—the Argyll already mentioned, the first Albion vehicle of 1900 and an early Arrol-Johnston, which is also about to be restored in the museum workshops.

The display on Stand 112 by the only remaining Scottish chassis manufacturer, Albion Motors, Limited, demonstrates clearly that not only has this company contrived to stay in the business for sixty years but that it is still right up with the leaders in design and standards of workmanship. In fact it falls to the lot of Albion Motors to show practically the only new commercial vehicles appearing at the exhibition, these being an uprated Series II Chieftain chassis in the popular 7-ton range and a new double-drive three-axle Reiver for genuine 10-ton loads (15½-ton gross rating), which forms the subject of our description and road

are powered respectively by the A.E.C. vertical 470 cu. in. 112-b.h.p. and horizontal 410 cu. in. 98 b.h.p. direct-injection diesel engines. A closer look at the engine-builder's art as practised by A.E.C., Limited, is afforded on the stand by a sectioned working AV690 diesel. The double-reduction rear axle introduced for the Mercury range, which embodies spiral bevel primary and double-helical secondary reductions, four-pinion differential and fully floating shafts, completes the display.

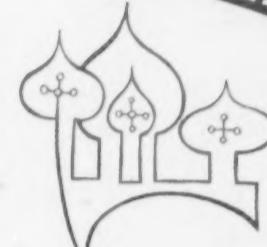
The Mercury also figures largely in the A.E.C. vehicles available outside for demonstration, two Mark II chassis fitted respectively with cab and platform body by Park Royal and Homalloy, and tipping body with Pilot equipment, appearing in the park alongside a Mercury articulated tractor and York semi-trailer. The heavy range is covered by a Mammoth Major eight-wheeler with Park Royal cab and Tillotson platform, while passenger

(Continued on page 13)



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LORRY—BUS—COACH

Scott and Hewitt Cases Reopened

AT Carlisle on November 5 the Northern area Licensing Authority, Mr. J. A. T. Hanlon, opened a public inquiry to obtain information sought by the Transport Tribunal after hearing appeals concerning special A-licence revocations. The appellants were Mr. John Scott, Arlecdon, and Mr. Charles Hewitt, Annan. Interim views of the Transport Tribunal on the appeals, which concerned the undisclosed substitution of heavier vehicles, were made known in July. Letters from the Bramber Engineering Co., Limited, of Glasgow, relating to its extension of the chassis of a vehicle, MNL829, by 30 in. and that this had added 3½ cwt. to the vehicle, and from the Dunlop Rubber Co., Limited, that the addition of heavier tyres would amount to 16½ lb. per tyre, were read out by Mr. Hanlon.

Mr. E. Waters, managing director of K. and B. Motors (Newcastle), Limited, from whom the vehicles were purchased, said he had no questions to ask the witnesses and would reserve his company's case until the second part of the inquiry at Newcastle on November 11. He then submitted that Mr. I. H. McLaughlin, who was responsible for the weighing of the vehicles, was no longer in the employ of K. and B. Motors, and he would be unable to enforce his attendance. Mr. Hanlon replied that a letter would be sent to Mr. McLaughlin requesting his presence; he also intended to call the weighbridge attendant at the Workshops for the Adult Blind in Newcastle, where the substituted vehicles were alleged to have been weighed.

At the appeal hearing the Tribunal said the gravity of the issues raised made it essential that they should now be resolved without further inquiry. In both cases the weight certificates furnished to the taxation authority were later in date than the applications made to the licensing authority. Nineteen questions were posed for investigation by Mr. Hanlon, 10 in the case of Scott, and nine in that of Hewitt. The Tribunal will further consider its decisions in the light of the information gleaned. [The interim views of the Tribunal in these two appeals were not reported in MODERN TRANSPORT owing to the intervention of the printing strike, but editorial reference to the issues involved in similar cases appeared in our August 22 issue.—EDITOR.]

New Zealand Restrictions

NEW legislation to liberalise certain aspects of road transport regulation is promised in New Zealand, including relaxation of restrictions on competition with rail transport. Five full-time district transport licensing authorities would replace the present eleven part-time authorities.

Movements of RM Buses

WITH the exception of the four prototypes, all the Routemaster buses of London Transport were to be withdrawn from the routes on which they have been experimentally operating for some months in order that they could be transferred to former trolleybus routes, commencing with the changeover on Wednesday this week at Poplar and West Ham garages. The original intention was

that the RM-class bus should be used in replacement of trolleybuses but latterly up to 48 (including two of the prototypes) have been scheduled for experimental service on routes 2, 8, 8B*, 11, 22, 27*, 76, 91 (* Sundays only). Among the buses which are now being operated from Poplar or West Ham are some of the batch of 50 fitted with air suspension on the rear axle.

Glasgow 72-Seater Trouble

REPRESENTATIVES of Glasgow municipal transport workers decided on November 3 that there will be no "operation without consultation" of the 169 new 72-seat buses ordered by Glasgow Corporation Transport Department. They say that they want to discuss the question of standing passengers. The general manager, Mr. E. R. L. Fitzpayne, said it was too early to say what was



Atkinson special T745 tractor with York 14-ton semi-trailer. The Gardner 5LW engine is returning 15½ m.p.g. under full load, it is claimed, and the 93-in. wheelbase tractor is interchangeable with lighter type units in a mixed fleet. The operator is Federated Conveyors, Limited, Leicester.

The Dodge articulated vehicle is operated by Richard Read, Longhope, Glos.

going to happen with the new buses, which were not due to come into operation until December, 1961. The Glasgow district committee of the Transport and General Workers' Union takes the view that the national agreement applies only to the normal capacity buses in use in Glasgow at present. Buses of large capacity should have no standing passengers, or at least a reduced number, the union claims.

Indian Transport Heads Visit B.R.S.

TWELVE members of a team representing a cross-section of the road transport industry in India have been visiting Great Britain during a round-the-world tour to study operational methods with the object of making Indian road transport more efficient and economical. Leading the team was Mr. D. S. Rathor of the Indian Administrative Service, who is Transport Commissioner of the State of Uttar Pradesh. On a day visit to British Road Services headquarters the team took part in discussions with Mr. H. W. Elliott, member of the board responsible for traffic matters, and senior members of his staff. They were later shown the B.R.S. general haulage depot at Hampstead, the

sideration to meet daily needs; 60,000 coal wagons are required daily, representing a 10-day turnaround compared, he claimed, with a three-day turnaround in Germany. Mr. Whalley expressed the view that the railways were the best medium for the movement of bulk commodity like coal over long distances. Equally strong opinions are held as to the obvious advantages of the motor vehicle for the transport of coal over short distances to non-rail connected firms. Our railway system was not working to capacity, and it was appalling, he thought, that motor vehicles should be conveying coal for distances of 70 miles or more from the loading points when the public highways were so heavily congested.

Scottish Omnibuses Move

PLANS have been laid by Scottish Omnibuses, Limited, to centralise its workshop activities at a 10-acre site which it has acquired at the Marine Gardens, Portobello, near Edinburgh. The move will cost about £100,000. It will bring under one roof the engineering and mechanical staff at present situated at the New Street, Edinburgh, depot and the coach building and painting sections

at present occupying another part of the Marine Gardens. The New Street depot will revert to its original purpose as a centre to house the buses.

The Scottish Omnibus group plans to buy 276 vehicles to add to its fleet next year. Scottish Omnibuses, Limited, itself will receive 60 vehicles; W. Alexander and Sons, Limited, will get 110; Western S.M.T. Co., Limited, 66; Central S.M.T. Co., Limited, 34; and Highland Omnibuses, Limited, six.

Current C-Licence Statistics

AT the end of September the total number of vehicles authorised under C-licences stood at 1,124,966 compared with 1,091,191 a year earlier and 1,059,546 in September, 1957.

Rotherham Bus Station Site

A SCHEME for a bus station in the centre of Rotherham on a site vacated by the East Midlands Gas Board was approved on November 9 at a meeting of the town council.

Cousins Speaks

BOTH sides of the passenger section of the transport industry appreciate the need for some modification of the national standing passengers agreement; such was the belief expressed by Mr. Frank Cousins, general secretary of the Transport and General Workers' Union, in Rotherham on November 6. He said he hoped that both sides would recognise that a great responsibility rested on them and that they would be able to negotiate a satisfactory settlement to a disturbing problem. Employees did not want to leave passengers on the pavement, but they also considered that those who had paid for a seat should be entitled to one and not have to stand.

Union Views on Standees

THERE was now general dissatisfaction among bus workers about the present standing passengers agreement, especially when many buses are being introduced with more seats than the 56 which were usual when the "eight standing passengers" rule was made in 1948. This was alleged by representatives of the T. and G.W.U. and the N.U.G. and M.W. when, following the recent Sheffield dispute, the issue was brought before the N.J.I.C. for the Road Passenger Transport Industry in London on November 5. They submitted proposals for a revision of the agreement, apparently on the basis that some 78-seat buses are difficult to work if the gangway is impeded by as many as eight standing passengers. They wanted a ban on standees in vehicles of this capacity. No decision was reached and there is to be a further meeting on November 18.

Bus and Coach Developments

K. W. Coaches, Limited, applies for a weekday circular service in Daventry. Birmingham and Midland Motor Omnibus Co., Limited, propose a new service between Stafford (Market Square) and Baswick Estate via Welling Cross.

The joint Southern National and Wiltshire and Dorset service between Yeovil and Salisbury via Shaftesbury has been discontinued. Wiltshire and Dorset works eastward from Shaftesbury at the old frequency, but the Southern National service west thereof has been considerably reduced.

While the low railway overbridge at West Drayton Station is reconstructed—a task which may occupy 12 months—London Transport routes 222, 224, 224a and 224n will be severed. Route 222 alone will operate between Uxbridge and West Drayton and passengers will have to use the station subway to connect with all four routes on the south side of the bridge.

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A MODERN SCOTTISH INDUSTRY

Rock Wool Production in Stirling

CAPE ASBESTOS COMPANY'S ROCKSIL WORKS

DESCRIBED at the official opening by the Earl of Home, then Minister of State for Scotland, as "a great new asset to the country and to the Highlands," the Rocksil Works in Stirling has been engaged since 1953 in an enterprise unique in Britain. The product emanating from the plant is a white fleecy long-fibred rock wool, which is completely inorganic and highly versatile. Since its introduction by the Cape Asbestos Co., Limited, this remarkable material, named Rocksil, has been finding rapidly increasing applications in transport and industry.

The raw materials are a white magnesian limestone (dolomite) quarried at Duror, near Loch Linnhe in Argyllshire and an argillaceous rock (fireclay) from a deposit 10 miles from Stirling. Rocksil is thus an all-Scottish product. The

between the plant and the adjacent railway siding or carry the material throughout by road to the works at Stirling, 90 miles distant. About a fifth of the dolomite is carried by rail. The siliceous fireclay is brought in by road from Bonnybridge, about 10 miles away, and both materials are stored in open-sided sheds having free access for mechanical shovels. The only other materials are a few small quantities of fluxes.

New Buildings and Plant

The plant and buildings at Rocksil Works are entirely new. Establishment of the factory was something of an achievement; building started in May, 1953, and first production was achieved in November the same year. The site on the outskirts of Stirling extends to eight acres, of which 3½ acres



Fitting Cape Asbestos Company's Rocksil insulation to electric suburban stock for the Manchester-Bury Line of the London Midland Region at British Railways carriage and wagon works at Wolverton; right, Rocksil resin-bonded slabs are extensively used in shipbuilding for engine-room casings

dolomite deposits at Duror have been known and worked desultorily for some scores of years, principally as a source of agricultural lime and as terrazzo, but the site had been derelict for some years prior to its reopening and mechanisation by the Cape Asbestos Company.

Production Processes

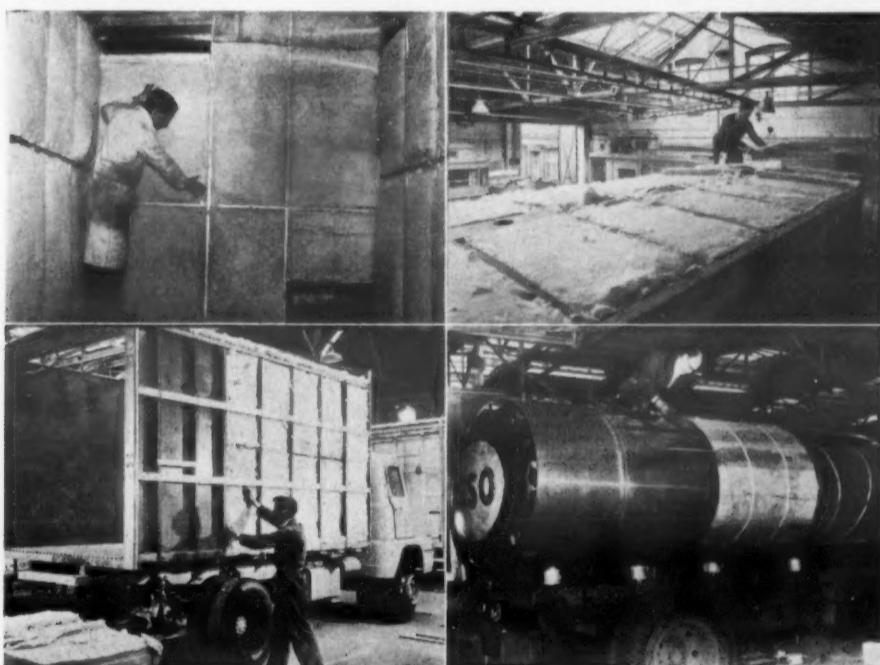
Production of rock wool from this type of raw material has been practised in Germany for about 20 years and part of the process used in the manufacture of Rocksil is operated by agreement with the German company that developed it. Basically the process comprises crushing and grinding the rock, melting it at very high temperature and extruding it through tiny holes into jets of high-pressure steam, when it solidifies into long silk-like fibres of uniform diameter. The average length of the fibres is 2 in. and the diameter is 10 microns, a size chosen to provide the best insulating efficiency in the refrigeration and steam ranges of temperature.

As it comes from the furnace Rocksil is deposited in a mat of interlocked random fibres having a

is occupied by the various buildings. Production is carried out on two lines comprising basically grinding operations, weighing and mixing, firing and extruding. For economic reasons—principally furnace heating—the process once started through either furnace is continuous 24 hours a day, seven days a week, between furnace maintenance periods.

In this plant also there is a high degree of mechanisation. Mobile shovels load the raw materials into feed hoppers of the automatic grinding machines, whence it is discharged into separate 20-ton storage bunkers. The finely ground dolomite and fireclay are withdrawn from the bunkers as required by screw conveyors, which carry it to an electronic weighing machine. Correct weighed proportions are hoisted automatically to a roller-pan mixer, where a small quantity of water is added to bind the mixed material into briquettes purely for convenience of handling. The two automatic oil-fired furnaces are maintained at a temperature of 2,800 deg. F. (1,500 deg. C.) and the briquettes are fed into the furnaces as required manually through ports in the sides.

As the rock melts it gravitates through platinum



Rocksil applications in road transport vehicles: In a refrigerated body on a 7-ton Austin for meat-carrying in Ghana, by Homalloy (London), Limited; to 24-ft. box bodies for semi-trailers to carry palletised packaged yeast, at the works of University Commercials and Coachworks, Limited; below, by Silverdale Motor Bodies, Limited, to insulated van bodies; and, right, by Bonallack and Son, Limited, to a lubricating-oil tanker for Esso Petroleum Co., Limited

natural density of 2½ lb. per cu. ft. (96 per cent of air by volume). Even without binding materials the wool holds together to form a resilient mat; with binding materials, of which several types are used, it is formed into variety of bonded products which resist mechanical shocks and vibration without damage or settling. Rocksil is inert chemically and is therefore non-corrosive and weathers well. It is non-hygrosopic and rotproof. The untreated rock wool withstands direct contact in service at temperatures up to 1,400 deg. F. (760 deg. C.) without deterioration; formed into slabs and rigid sections, Rocksil is recommended for use up to 600 deg. F. (316 deg. C.) only, owing to the limiting temperature of the resins used as binding material.

Mechanised Quarrying

The dolomitic quarry at Duror was completely mechanised when it was taken over by the Cape Asbestos Company. The rock is blasted out and is picked up by mechanical shovel and loaded directly into a crusher, which reduces it to manageable size. From the crushing plant the rock is moved by conveyor belt to a 120-ton hopper, from which it is loaded directly into lorries that shuttle

dies at controlled temperature maintained by jets of high-pressure steam; it cools into long silky flexible fibres which are deposited onto continuous conveyors as a 3-ft. wide mat. The speed of the conveyors is variable and governs the thickness of the rock-wool mat produced. This can be the end of the production process for untreated Rocksil, when the mat is run on to a paper sheet and then, together with the paper backing, formed into rolls of suitable length.

Introduction of Resin

A large percentage of the production, however, now goes into manufactured products involving impregnation to varying degrees with resin. For these applications the resin is introduced as part of a continuous manufacturing process, the mat then passing without intermediate handling over an extension of the conveyor belt equipped with plant for resin impregnation and curing. The material is manufactured in a variety of densities ranging from 2½ lb. per cu. ft. and compressed up to 10 lb. per cu. ft., and into thicknesses from ½ to 4 in. Depending on the type of service for which it is intended, it is stitched or assembled

(Continued on page 6)



Mileage at a glance

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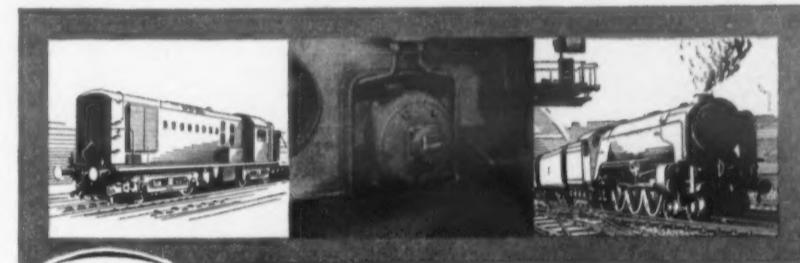
drive and resilient mounting for attachment to axle-box cover. It is interchangeable with AEI Type JB tachogenerator for axle-shaft drive. Form B is a counter unit with reduction gearing for incorporation with AEI Type RC tachogenerator, driven from the generator shaft.

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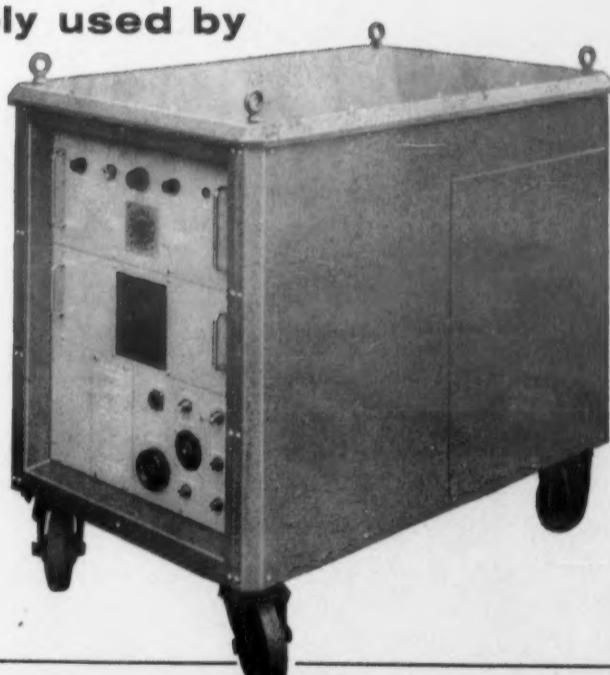
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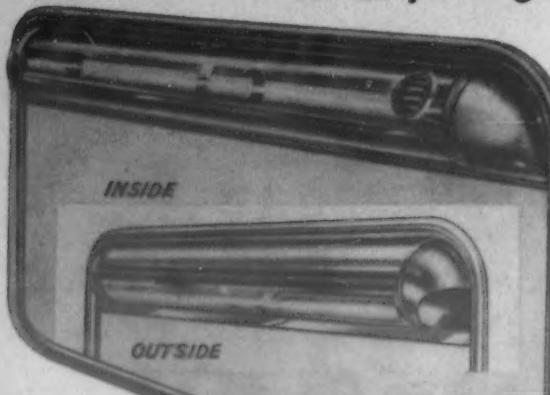
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LETTERS TO THE EDITOR

The Rural Bus Problem

The Editor is always glad to receive letters from readers on subjects germane to the transport industry, but these should be written as concisely as possible. The opinions expressed therein must not, however, be regarded as having editorial endorsement. Where correspondents desire to use a nom-de-plume it is essential that the Editor should be informed of the name and full address of the writer as indication of good faith.

From Brig.-General Sir H. Osborne Mance, K.B.E., C.B., C.M.G., D.S.O.

SIR.—The comments on the front page of your issue of October 24 despondently suggest that the Jack Committee cannot think of any better solution of the rural bus problem than "a substantial concession in the crippling rate of fuel tax." Does this mean reduction of tax to all road users, or to all omnibuses, or to non-paying services only? In neither case would the relief in taxation bear any specific relation to the cost of rural services, and there is no guarantee that such relief would enable any particular service to pay its way, while the cost of the subsidy would be out of proportion to the cost of the rural service which it is desired to cover. Whether or not fuel taxation is too high is quite a different question from the financing of rural bus services.

I suggest you are on much firmer ground when you refer to the lack of a policy. It is hard to see how the Jack Committee can make any proposals which are not based on the assumption of a definite national transport policy.

For example, should transport pay its way commercially? If so, this involves equal competitive conditions (or 100 per cent monopoly of all forms of transport). It also implies that non-paying services imposed on an undertaking should be paid for on a commercial basis. How can such services be paid for—by subsidy from the State or local authorities, or by a levy on all users of transport by road, or on all users of all kinds of transport? Should the user have free choice of the means of transport including the use of private transport? What is the underlying policy of road taxation?

With some guidance on policy the committee could start with recognising that there are numerous services which are not commercially justified but which are considered to be essential transport services in the national interest. What is the extent of these services? Who is to decide whether any particular service comes within that

category and its cost taking into account any effective monopoly benefit enjoyed by the operator, and the possibility of raising the fares or cheapening the cost of providing the service? Where will the money to pay for these services come from, e.g. from the Ministry of Transport vote, from the budgets of local authorities, from a road fund, from a track pool, or by remission of taxation on some practical basis yet to be determined at the expense of the Exchequer?

I suggest that there could be ample scope for the committee to embody suggestions on the above points in some scheme promising a reasonable degree of uniformity in application. — Yours faithfully,

H. O. MANCE.

18-22 Abchurch Lane,
London, E.C.4.

Wishes of the Trader

SIR.—I was puzzled by one thing in the T.R.T.A. Survey of C-licensed vehicles reported on in your issue of October 24. It was reported in Table I that 75 per cent of the votes cast said that C-licence vehicles were preferred to rail for "speed of delivery and certainty of timing." It was explained that this was on the basis of one vehicle, one vote, so this represented the votes of 75 per cent of the total of 98,340 vehicles—i.e., 73,755. It subsequently appears from Table II that of the 98,340 vehicles, 14,754 were non-load-carriers and of the load-carriers 24,426 were small vehicles up to 1½ tons.

It is hard to see how these vehicles could possibly be in competition with the railway—they are clearly local delivery vans. If one assumes that all the rest—i.e., all load-carriers over 1½ tons unladen weight (and even these include many electric vehicles and special types which may not be in competition)—are the ones which are actually preferred to rail, they only total 59,160.

In the conclusion not evident that some votes against the railway have been cast on behalf of vehicles which cannot really be preferred to rail because they cannot be said to be in competition with the railway. How does the independent statistician who checked the document against bias explain this? If a vote against the railway on "speed of delivery and certainty of timing" could only be registered by vehicles genuinely in competition with the railway, then probably the response would have been 100 per cent. This part of the survey would then have clearly been seen in its true light—as a subjective expression by the C-licence operator of confidence in his own efficiency. A truly objective survey could only be carried out by a questionnaire to the customers—not the operators of transport.—Yours faithfully,

B. A. COULSON.

Egglefield,
Garrow Hill,
Hull Road,
York.

Railcar Preservation Sought

SIR.—The Leeds Tramways ceased operation on November 7. Included in the tramway fleet, but at present disused, is a single-deck railcar which is worthy of preservation, as it is the most technically advanced tramcar in the British Isles. This railcar, No. 602, is the only all-electric vehicle in this country and its performance is first class; noise is, to all intents and purposes, non-existent; acceleration and retardation is extremely rapid but very smooth, being entirely free from jerks. The control of the car, which is mounted on P.C.C. trucks with rubber-sandwich wheels, is by a Crompton-Parkinson Vambac control unit.

If this car is sold to the scrap merchants along with all the other Leeds trams it will be a very big loss to all those who support the tramway cause, as well as to those who are "just interested" in trams.

May I, therefore, appeal for donations towards the cost of buying No. 602, transporting it and providing depot accommodation at the Tramway Museum in Derbyshire, where we eventually hope to be able to operate the car? The total amount required is about £400. Will anyone interested in this scheme please send queries or donations to the address below? A stamped addressed envelope will be appreciated if a reply or receipt is required.—Yours faithfully,

R. R. GILKS,
Hon. Treasurer,
602 Preservation Society.

104 Sandringham Drive,
Moortown, Leeds, 17.

A MODERN SCOTTISH INDUSTRY

(Continued from page 5)

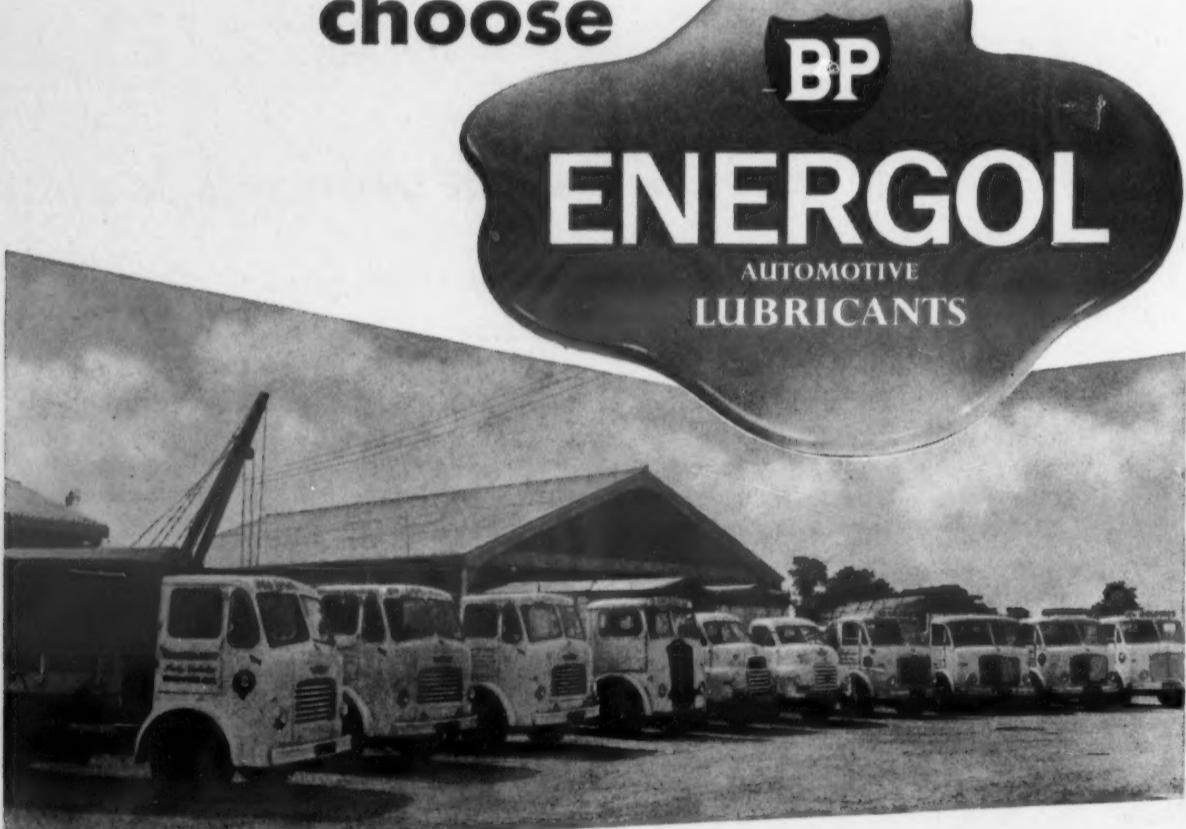
between different types of paper, scrim, wire mesh or expanded metal; faced up with other materials such as aluminium foil or glass cloth; pressed into constructional boards or felted mats; moulded into rigid insulated sections for pipes of varying diameters; or enveloped in p.v.c.

Because of the very great increase in bulk from raw-material state to finished Rocksil product and the fact that 24-hr. production is maintained, speed in packing and dispatch is of prime importance if the large storage space is not to be swamped. For this reason, the bulk of delivery from the factory is made by rail and the site has its own railway siding, with large covered wagons always available for loading. A few loads are dispatched by road, generally by big-bodied vans as return loads to various parts of the country.

Many Transport Applications

Rocksil in its various forms is used extensively for sound and thermal insulation in road and rail vehicles and containers and as fire-resistant bulkheads and engine and boiler-room casings as well in ships. There are also many applications such as cold-water system protection, refrigerator insulation and for insulating pressure vessels and storage tanks, in other industries and the domestic field.

As well as producing the basic material and the wide range of manufactured products mentioned briefly here, the Cape Asbestos Co., Limited, is also an insulation contractor. The company's contracts department maintains a staff of experts in this field whose services and advice are available for the design and execution of complete insulation and frost protection installations.



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Diesel vehicles which have given entirely trouble-free service in the period. We have been able to show saving in wear, fuel consumption, oil consumption, and battery service. We have also used Power Diesel Fuels for a number of years, which have given complete satisfaction."

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NEW ENGINEERING HEADQUARTERS

For Lincolnshire Road Car

RENOVATION OF BRACEBRIDGE HEATH

IT is not unknown for a bus company to secure a complete change of engineering shops by removing to new premises and starting with a clean sheet. The Lincolnshire Road Car Co., Limited, has, however, effected a metamorphosis of its engineering premises at Bracebridge Heath, just outside Lincoln, without changing their location. It is, however, only fair to point out that the change was made possible largely by removal of the principal garage from Bracebridge Heath to St. Marks in connection with the new bus station opened on March 4, 1959. This enabled space to be found for the rebuilding operations which were completed late this summer.

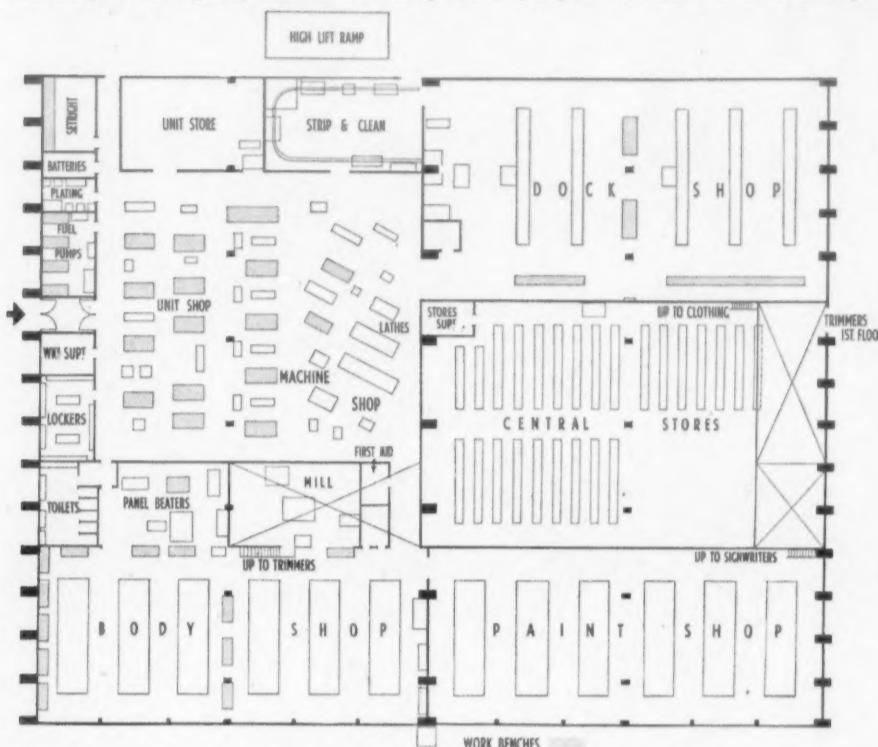
The headquarters of the Lincolnshire Road Car undertakings were originally constructed during

staff is provided in the office block which is adjacent to the works, and which houses the engineering headquarters staff responsible for the engineering administration of the whole company. These office premises were, until their transfer to the bus station at St. Marks, used also for the traffic department.

Fleet Maintenance

The company's fleet has been somewhat contracted of recent years; at the end of August this year it totalled 414 buses and coaches. Vehicles receive dock overhauls at a number of convenient centres; these are now Lincoln, Scunthorpe and Boston. Until the reconstruction of facilities at Lincoln docking was also carried out at the Grantham garage. The fleet allocation among the

workshops is as follows:



The renovated works of the Lincolnshire Road Car Co., Limited, at Bracebridge Heath

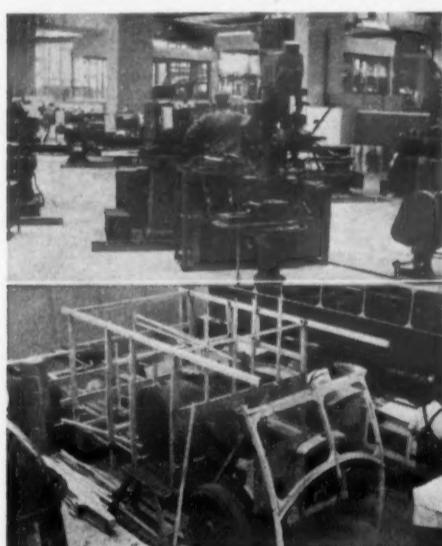
the 1914-18 war as aircraft hangars; they were adapted by the late Mr. W. P. Allen as a depot for his Silver Queen bus business. The Lincolnshire company employed four hangars; one of these has recently been transferred to British Road Services as a depot, one is employed mainly to house vehicles delicensed during the winter months and two constitute the new engineering shops.

Metamorphosis of Building

The new building utilises the brick pillars of the old building for the main support of the new roof, which consists of reinforced concrete trusses, intermediate pillars, and purlins which are covered by

garages was in August as follows: Boston 24, Cleethorpes 20, Gainsborough 12, Goole 11, Grantham, 33, Grimsby 9, Holbeach 10, Horncastle 7, Lincoln 59, Louth 18, Mablethorpe 13, Newark 21, Retford 16, Scunthorpe 99, Skegness 39, Sleaford 16, and Walton 7.

At the central works at Bracebridge Heath the following major items of work are undertaken. First is the complete overhaul of all mechanical units such as engines, gearboxes, axles, differentials, fuel-injection equipment, electrical equipment, and all ancillaries of a passenger service vehicle. The work is carried out in the unit and machine shop. Only crankshaft grinding is put out



At Bracebridge Heath: Machine shop view; the paint shop; below, building a garage service lorry fitted with tank for used oil recovery service; and, right, servicing a vehicle

corrugated asbestos sheeting and an inner asbestos lining for insulation purposes. Extensive use has been made of patent glazing for outside walls and internal partitioning, and also for the roof lights. The main external access doors contain a considerable area of glazing, and these sliding doors are mounted on rollers supported in ball bearings. The alterations were carried out under the supervision of Mr. Alan Briggs, architect of the Tilling group.

The electrical power lines consist of mineral insulated copper-covered cable, laid directly on the old floor, on top of which a new surface has been laid. This consists of a 3-in. layer of concrete, above which is a 1-in. layer of granolithic covering. The lighting is almost entirely by fluorescent tubes, the fittings being supported on a catenary cable system. Heating in the paintshop and in the pits is by hot water radiators fed from an oil-fired boiler, but all other areas are heated by blown air from oil-fired units, of which there are three in the works.

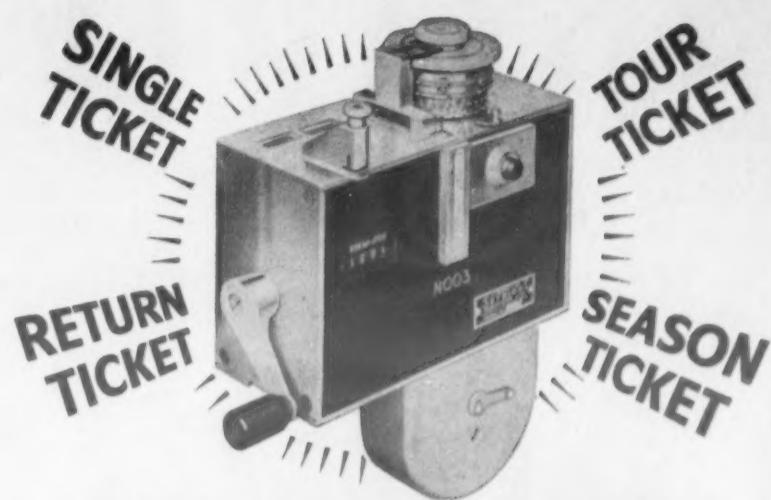
Washing facilities have been modernised by the introduction of the Clage electric water heater on individual taps; for a small expenditure of current instantaneous hot water is available. Besides the usual washing and toilet facilities each member of the staff is provided with an individual clothes locker. A first-aid room is situated near the centre of the works. The canteen for use by the works

—and that to the associated Eastern Counties Omnibus Co., Limited. Secondly comes the minor overhaul or docking of all L.R.C.C. vehicles operating in the Lincoln area. This work is carried out in the dock shop, shown on the diagram. In the body shop the company attends to overhaul and repair of the bodies of all vehicles in the fleet. The painting of all vehicles in the fleet is also carried out at Bracebridge Heath.

Works Layout

With the exception of major accidental damage and premature mechanical failures all the work can be considered as planned preventive maintenance, and is based on intervals of mileage so far as mechanical items are concerned, and intervals of time so far as body overhaul and painting are concerned. The present figures for these intervals are for docking to be carried out every 60,000 miles and for the complete overhauls of major mechanical units to come at 240,000 miles. Minor body overhauls are seen to at intervals of two years and major ones approximately every eight years. In any event the body is brought in for painting at intervals of two years to coincide with attention to the physical structure of the body.

The layout of the works has been designed
(Continued on page 10)



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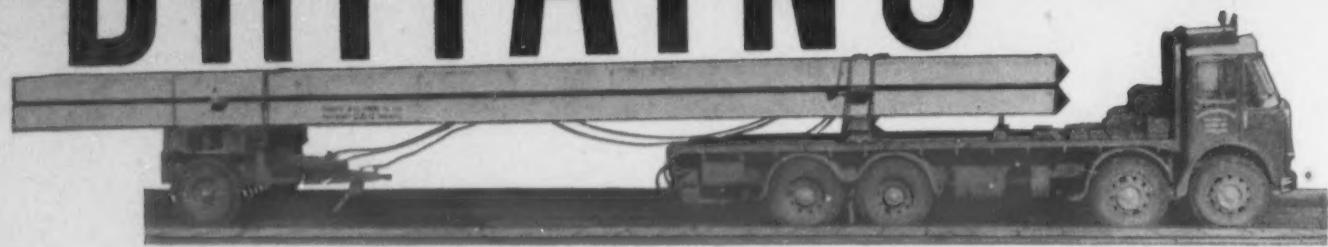
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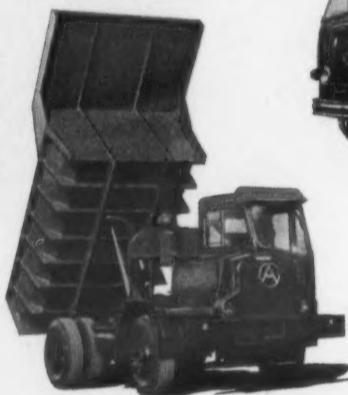
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NEW INDUSTRIAL DIESEL

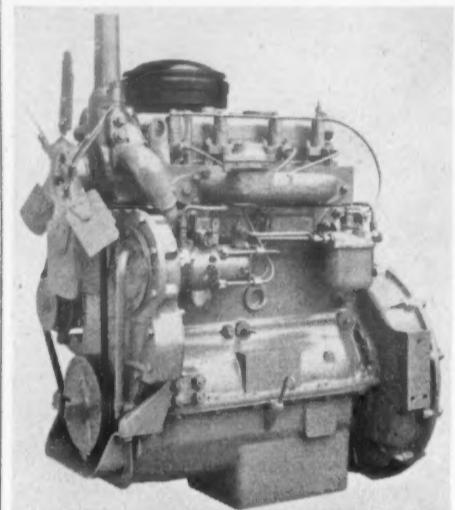
Perkins Unit of 60 h.p.

A NEW industrial diesel engine announced by Perkins Engines, Limited, Peterborough, is a four-cylinder addition to the wide Perkins industrial range. It is to be named Four 203, following the current Perkins practice of indicating by the engine's name the number of cylinders and capacity in cubic inches. For variable-speed applications such as fork-lift trucks and mobile cranes, requiring between 2,000 and 2,400 r.p.m., the engine is available with a hydraulic governor and is rated up to 60 b.h.p. at 2,400 r.p.m. It develops up to 47 b.h.p. at 2,000 r.p.m. for continuous use when fitted with a mechanical governor. Maximum torque, obtainable at 1,350 r.p.m., is 151 lb./ft.

The Four 203 has a 3.6-in. (91.44-mm.) bore and a 5-in. (127-mm.) stroke and 203.5-cu. in. (3.33-litre) capacity. Perkins is also offering an almost identical version, named the Four 192, which has a smaller 3.5-in. bore and develops 45 b.h.p. at 2,000 r.p.m., continuous rating and 58 b.h.p. at 2,400 r.p.m. for intermittent use.

Gear-driven Auxiliaries

An attractive and extremely important feature of the Four 203 in-line engine for industrial operators is the practical method of meeting power take-off requirements. Timing is arranged through a geared drive, which gives improved running conditions and allows power take-off from the gearing at two points. Facilities are available for mounting off the camshaft gear a hydraulic pump,



A Perkins Four 203(I) diesel engine of up to 60 b.h.p.

with a capacity of up to 17 gal. per min. at 1,700 p.s.i., to operate main hydraulics, such as fork-lift truck equipment. Provision is made also for a hydraulic pump beneath the fuel pump, a point particularly suitable for connecting up power-assisted steering systems.

Extra-life features built into the Four 203 include chromium-plated steel thin-wall liners as a standard fitting. These liners, pressed into the cylinder block, are extremely durable and can be quickly replaced. Cast-iron liners are fitted on the Four 192. The Four 203 has the well-proven Perkins combustion system, with twin-hole injectors, and is equipped with the C.A.V. DPA distributor-type fuel pump.

The DPA pump permits the fitting of either mechanical or hydraulic governors as an integral part of the pump body. Engine speed is not affected at high altitudes when using either governor. The mechanical type is capable of governing to within B.S.649: 1958 limitations up to 2,000 r.p.m. for approved applications. The engine is also fitted with the C.A.V. Thermostat to assist cold starting.

Other Features

Other features of the Perkins Four 203 include cold rolled crankshaft rear main journal fillets to give greater fatigue strength; use of unified threads; and oilways drilled in the crankcase to reduce external piping to a minimum. A rotor type of lubricating oil pump is driven off the crankshaft and supplies oil to the main oil gallery through a full-flow filter.

Extensive production orders for Four 203 and Four 192 engines have already been placed with Perkins by a number of leading industrial equipment manufacturers. Applications to which these will be used include mobile cranes, fork-lift trucks, industrial tractors and welding sets. Both Four 203 and Four 192 engines will be available in stage-by-stage form up to a complete power pack in line with the policy adopted by Perkins for other industrial engines.

B.I.C.C.—BURNDY PACT

New Anglo-American Company

ON September 30 British Insulated Callender's Cables, Limited, signed an agreement with the Burndy Corporation, Norwalk, Connecticut, U.S.A., to form a new company in the United Kingdom to be known as BICC-Burndy, Limited. The new company has an authorised capital of £250,000 and has been formed with the object of manufacturing and marketing the existing range of Burndy products in the United Kingdom and other parts of the Commonwealth. BICC-Burndy, Limited, will be in a position to supply all types of electrical connectors for Electricity Board transmission, distribution and power station work, and for manufacturers of switchgear and appliances. It will also provide connectors which have a wide application in the aircraft and shipbuilding industries.

The Burndy Corporation has evolved products to cover every type of electrical connection in a wide variety of materials. Its association with BICC, leading cable manufacturer in this country, brings the most advanced techniques for solderless connectors and terminations to British industry.

Manufacture in the United Kingdom will commence next January, but initial supplies to American Standards will be available for test and examination almost immediately. Among these products is a forged copper line tap, the design of which is new to Britain, for application in rural electrification. Production and marketing operations will be carried out at the BICC Accessories Division, Prescot, Lancashire.

A SCOTTISH-AMERICAN ENTERPRISE

North British Rubber Company at Castle Mills



EXPANDING PRODUCTION WITH NEW PLANT

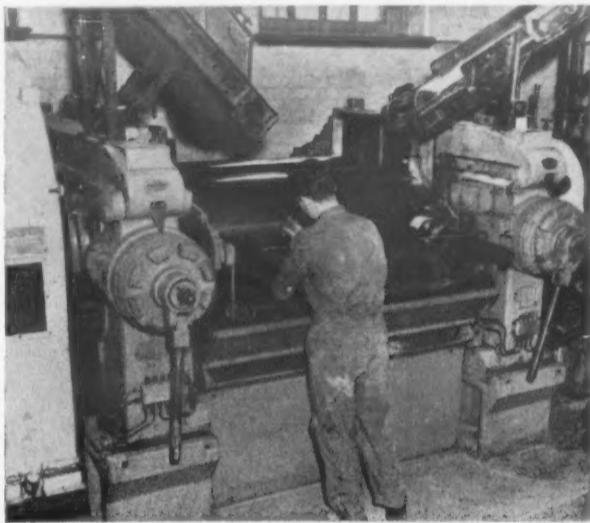
A North American-Scottish link forged in 1855, when Henry Lee Norris came to Edinburgh from the United States to set up a manufacturing plant for vulcanised rubber goods, was renewed almost exactly century later when control of Norris's North British Rubber Co., Limited, was acquired by the United States Rubber Company.

It was a peculiarity of English patent law in the 19th century that brought about the founding of the rubber industry in Scotland. In those days English patent protection did not extend to the whole of the British Isles, so that Hancock's English patents covering rubber vulcanisation did not apply in Scotland any more than did Good-year's American patents. This gave Norris the opportunity of establishing his business in Edinburgh, which he did in a disused block of buildings by the side of the Union Canal known as Castle Silk Mills. The North British Rubber Co., Limited, being registered there as a limited liability company in September, 1856.

Early Products

At first the new company was engaged solely in the manufacture of rubber footwear but new products, including belting and packing, were soon added and within a dozen years the four skilled workers who came with Norris from America had been joined by some 600 local workers, who were turning out a wide variety of rubber articles. Attention was first turned to the production of rubber tyres in 1870, when North British produced a set of vulcanised rubber tyres for the road steamer, or traction engine, built by R. W. Thomson. Another milestone was the development of the first detachable tyre by W. E. Bartlett, then general manager of North British Rubber. The Bartlett-Clincher patent was taken out in 1890 and by the following year detachable tyres were being produced at Castle Mills.

The range of rubber products increased enormously after the outbreak of the 1914-18 war, during which the company was engaged in the manufacture of vast quantities of equipment vital to the war effort. With the upsurge of the use of the road vehicle after 1918, emphasis of production rapidly passed to tyres and tubes, but again during

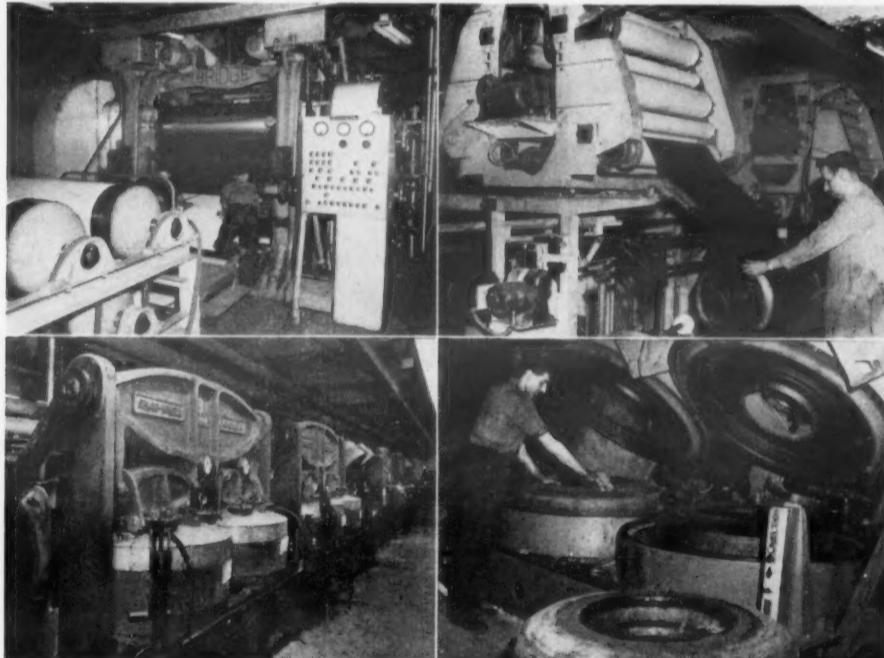


A bead mill in the Castle Mills, Edinburgh, factory of North British Rubber Company, from which stock is led off to the dual tuber

production in the same period has been expanded by between two and three times. The dual tuber installed in the early 1940s gave North British a competitive advantage over its contemporaries and it is still a comparatively rare piece of equipment in the United Kingdom. It is coupled to two separate mill lines by conveyors, one supplying the centre-tread stock, the other the sidewall stock. The two stocks are extruded simultaneously through a die to give the required tread.

New Machines

Among the large machines recently installed is a new cord calender by David Bridge and Company which embodies all the latest thought in applying rubber compound to tyre fabric. The machine has compensated-pressure rolls, flood lubrication and



Modern equipment installed at Castle Mills works: The new Bridge cord calender; one of a battery of truck six-ply Akron Servicers in the tyre-building department; below, some of Bag-o-matic tyre presses; and, right, presses for giant tyres showing p.s.v. tyres being prepared for vulcanisation

the 1939-45 war the North British Rubber Company made an important specialised contribution to the war effort of Great Britain with a highly diverse range of products. These ranged from such homely articles as baby helmets, anti-gas curtains, civilian gas masks, ear plugs and so on to more warlike items such as balloon fabric, tubing and hoses of every description and non-slip weatherproof sheathing for warships' decks, as well as great quantities of tyres and tubes.

The application of rubber components to aircraft and aero engines brought the need for higher precision than had been required for normal commercial production, and the company found it necessary to design new types of moulds and dies and develop new manufacturing techniques. This it did with the same skill evinced in the enforced switch to the much wider use of synthetic and reclaim rubber, as the natural rubber-producing areas fell to the Japanese.

A large new factory was built and equipped in the short space of a year to meet the heavy demand for reclaim rubber. The North British Rubber reclaim factory remains the only one in Scotland. There is a big demand for this product in the manufacture of many types of rubber goods.

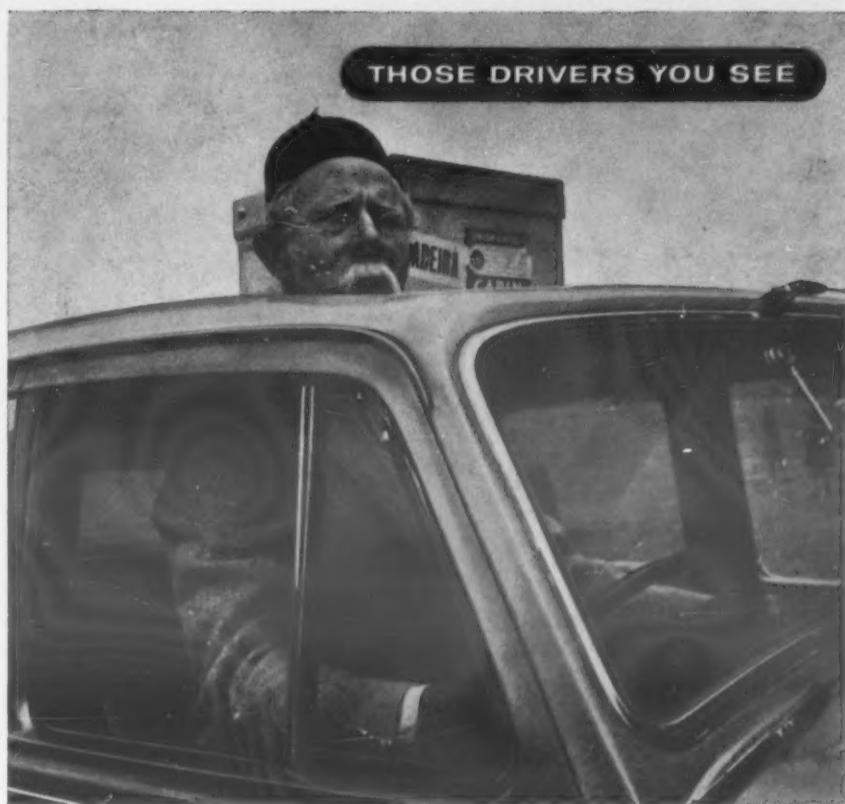
an automatic feed that gives an even hank of stock, across the calender rolls.

The mill lines themselves, of which there are six employed to provide the two or three stages of milling necessary with the various grades of stock, have come in for recent modernisation. Two lines are new and the remaining four have been completely overhauled and fitted with the latest safety device, all manufactured by the David Bridge company. As well as the line of automatic Bag-o-matic tyre presses, which, compared with the older type McNeil press show a substantial reduction in cure cycle, an Akron Standard Servicer is fitted to each car and commercial vehicle building machine.

These servicers, which are produced in this country by Akron Standard (Engineers), Limited, Stoke-on-Trent, under American licence, have workheads that swivel through 180 deg. The skilled tyre builder works at the front of the turret while the rear side is loaded by a female operative with components for the next batch of tyres, ready for swivelling into the working position as soon as the front rolls are emptied. Thus the skilled worker is relieved of all service operations.

Current products of the Tyre division of the

(Continued on page 10)



But-zis-is-ow-we-drive-in-my-country

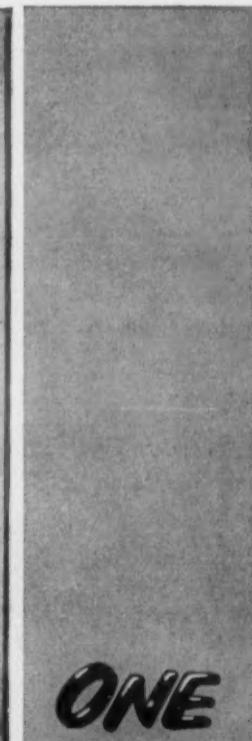
There are lots of different kinds of driver on the road. A good many different kinds of fuel too. The safest thing to do is to stick to BP Diesel—available at Agency sites throughout Britain. With a Shell and BP Diesel Agency card your drivers can fill up with BP Diesel on credit, or cash at agency rates.



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New Engineering Headquarters

(Continued from page 7)

around one focal point, namely the main stores, and all the major shops have direct access to a stores serving hatch, as seen in the diagram we reproduce. The main stores, incidentally, supply the needs not only of the central works but also of all the sub-stores at depots and depot workshops. The dock shop is equipped with five pits, two of which have side bays for dealing with underfloor engines.

The unit and machine shop is associated with the stripping and cleaning shop, the unit stores, the fuel-injection or pump room, the battery shop and the plating shop. Among interesting equipment here is a waterpump tester, a Crypton electrical test bench, and in the machine shop itself a Paddon cylinder

borer, a Jones-Shipman grinder and a Berry lathe. Parts, on dismantling, are cleaned and special arrangements have been made for disposal of the sludge from the cleaning process through a three-chamber interceptor. Worn parts such as stub axles are nickel plated in a Canning plating bath and then ground to a standard size. The fuel pump room is provided with the usual Hartridge and Merlin equipment. The battery shop has a Manesty distilled-water plant and a Crypton charging unit.

Body Shop

The body shop is capable of taking six vehicles with ample working space around them; it contains a wood mill, panel beating shop and, upstairs, a trimmers shop. A stores lorry which carries

a tank for transfer of dirty oil from depots to headquarters was under construction at the time of our recent visit. The paint shop is also able to take six vehicles; with it is associated the signwriters shop where the undertaking writes its own blinds, queue boards and similar items. Immediately outside the works is a Laycock hoist and Weaver steam jenny cleaning plant, on which the chassis of all dock vehicles are cleaned by means of high-pressure steam before entering the works. In the old building, adjacent to the works, the company is installing an engine test bay for running-in and testing of overhauled engines.

Finally, there is in the works one shop the activities of which are not concerned in any way with the maintenance of vehicles. This shop is known as the Setright shop, and is responsible for the overhaul of the ticket-issuing machines used by the company. These machines come into the works for overhaul at intervals determined by the number of tickets issued, that is, registered on each machine. Improved techniques enable the run without attention to be approximately half a million issues.

We are indebted to the courtesy of Mr. R. F. Bushrod, general manager, Lincolnshire Road Car Co., Limited, and Mr. Ian R. Kydd, chief engineer, for the opportunity to assemble the foregoing information.

Mr. H. Benton, Kelvin Hughes representative for the North Wales, Cheshire and Lancashire area has now moved to 27 Laneside Drive, Bramhall, Cheshire. (Telephone: Bramhall 2841.)



The new look of the doors of the Lincolnshire Road Car works and, right, the Crypton electrical test bench

A SCOTTISH AMERICAN ENTERPRISE

(Continued from page 9)

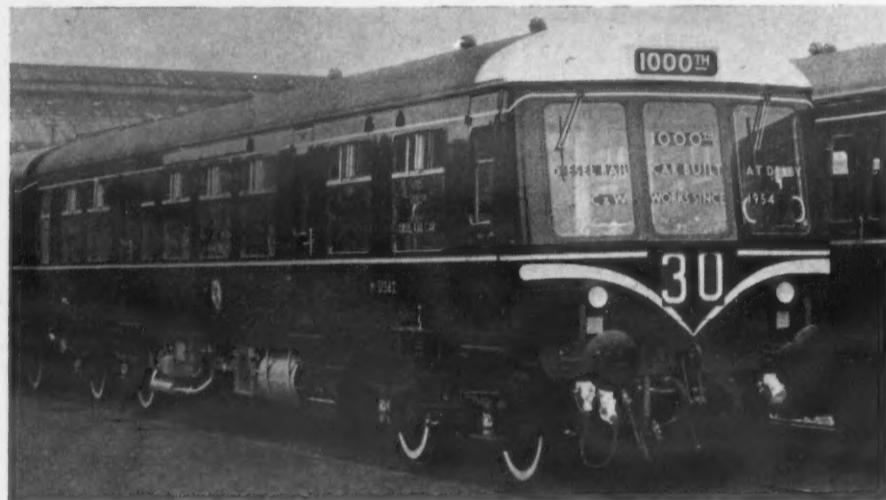
North British Rubber Company include tyres bearing both the U.S. Royal and Fisk brands, the Fisk Company, which was founded in Massachusetts in 1898, having been acquired by U.S. Rubber Company in 1940. Commercial-vehicle tyres include the U.S. Royal Fleetway—a highway tyre; Fleetmaster—for on-road and moderate off-road service and Super Fleetmaster—a heavy-duty all-surface tyre with self-cleaning extra-deep tread. The Fleetway and Super Fleetmaster can be obtained with the exclusive Safety Steel Shield—fine steel wires embedded in rubber placed immediately under the tread—which protects the tread area from destructive cuts, groove cracking and separation. Examples of these tyres are to be seen on the company's stand at the Scottish Motor Show.

Use of Synthetic

Although the vast majority of tyres produced by North British embody cords of super-tenacity rayon, the company also produces nylon-cord tyres, mainly for arduous off-road service and for export. The company, in its product development, is continuously aiming to make best use of the latest grades of synthetic rubber, having an interest in the International Synthetic Rubber Co., Limited, at Hythe, Southampton, and uses synthetic in applications where it has proven advantages. In commercial-vehicle tyres the majority are still virtually 100 per cent natural rubber. It is certain that whatever future development may bring in the field of tyres and the uses of rubber, the North British Rubber Company will be up with the leaders.

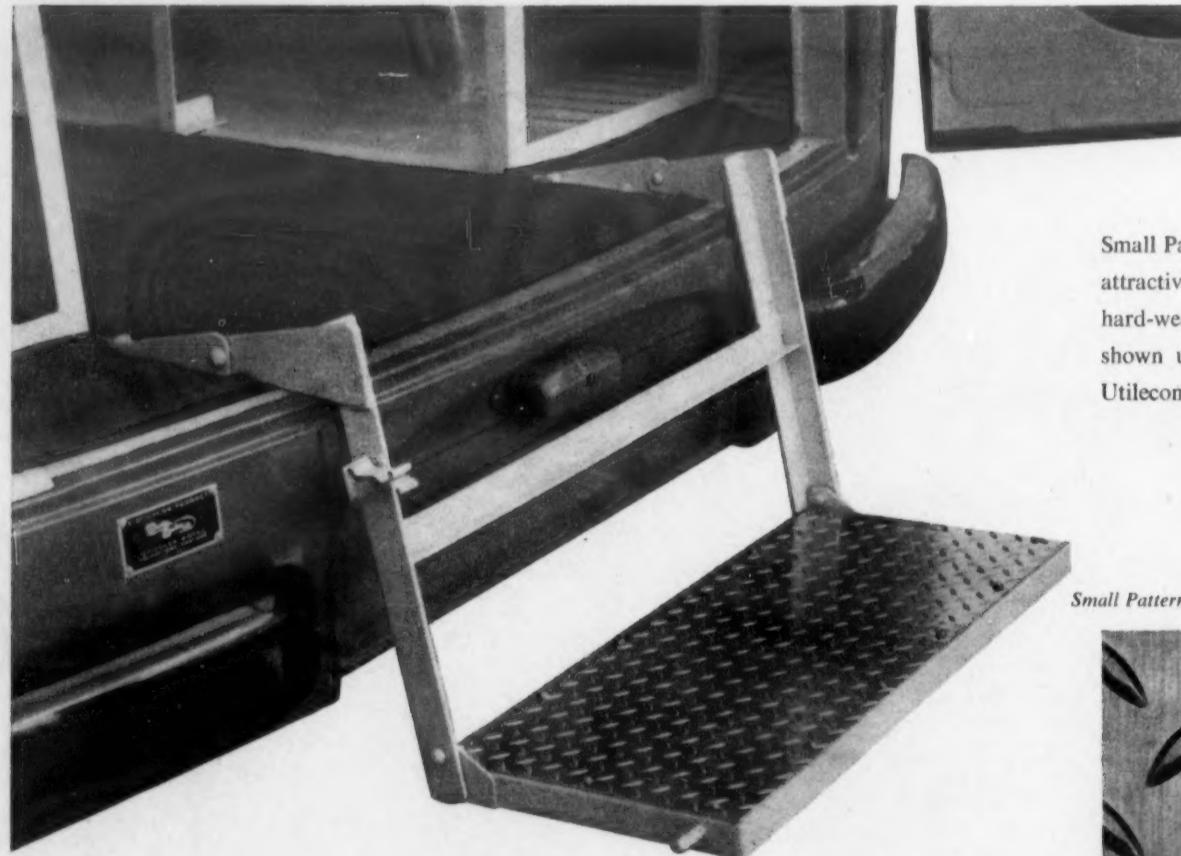


The fascination of the steam locomotive with a youthful admirer gazing at the American-type 4-4-2 on the 9½-in. gauge railway in Danson Park, Bexleyheath, may be contrasted with the thousandth diesel railcar to be built since 1954 at British Railways Derby works. This car is one of those with Rolls-Royce engines for London Midland Region services between St. Pancras and Bedford



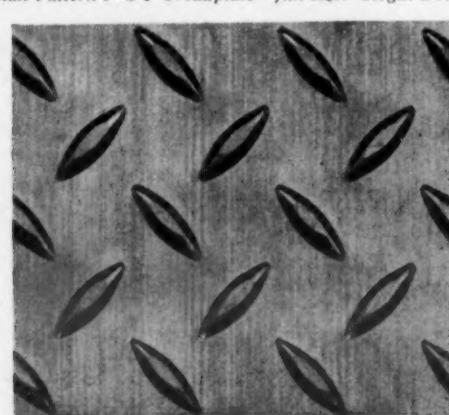
BRITISH ALUMINIUM

P-G-P TREADPLATE



Small Pattern P-G-P* Treadplate presents an attractive non-slip surface, which is both hard-wearing and easy to clean. It is here shown used for the folding rear step of a Utilecon by Martin Walter Ltd.

Small Pattern P-G-P Treadplate—full size. *Regd. Des.



The BRITISH ALUMINIUM Co Ltd

NORFOLK HOUSE ST JAMES'S SQUARE LONDON SW1



ADVANCED WULFRUNIAN

Guy Bus with Air Suspension, Disc Brakes and Automatic Transmission

WITH ROE 75-SEAT LOW-HEIGHT BODY

MANY advanced features are incorporated in the latest Guy bus chassis, the first of which, with a 75-seat Roe double-deck body, for West Riding Automobile Co., Limited, was ceremonially named Wulfrunian at the Wolverhampton works of Guy Motors, Limited, by the Mayoress of Wolverhampton last Wednesday. An outstanding characteristic of the new chassis is its versatility. It employs a conventional front-mounted vertical diesel engine, which can be of either Gardner or Leyland manufacture, and can take single- or double-deck bodywork with the entrance positioned anywhere along the side from extreme front to the rear.

The features which give rise to the Guy Motors claim that it is the most technically advanced bus in the world are anti-roll air suspension all round— independent at the front, automatic transmission, disc brakes all round, elimination of all chassis lubrication points except in the propeller shaft and

A Hardy Spicer two-piece open tubular shaft with rubber-housed centre bearing carries the drive to the gearbox, which is set at an angle in the chassis aft of the midships position. This rearward mounting is selected to bring the box well behind the point 13 ft. from the front of the bus, forward of which a minimum ground clearance of 10 in. is required by British regulations, so that the gearbox can be set low enough not to interfere with the otherwise very low floor level. Transmission options include a four- or five-speed Wilson epicyclic gearbox of Guy manufacture with C.A.V. automatic control or a four-, five- or six-speed Z.F. synchromesh gearbox with air-assisted gear-change. Ground clearance is $5\frac{1}{2}$ in. under the epicyclic unit and $6\frac{1}{2}$ in. under the synchromesh unit.

A short Hardy Spicer shaft connects the gearbox with the rear axle, which, to preserve the low level of the centre gangway, is of the double-reduction type having the main casing at a lower level than the hubs. The primary reduction is through spiral-bevel gearing, arranged with the differential towards the left-hand side of the casing, while the secondary reduction is through helical gears directly to the hubs.

Suspension and Steering

Air suspension fitted to the Guy embodies several features for which patent application has been made and which the company feels give it a substantial lead in development in this field. The system employs bellows manufactured by Firestone to Guy requirements, two at the front and four at the rear, and levelling valves developed by the Guy company which act instantaneously to vary pressure in the air springs according to the load imposed on any corner of the chassis. Design frequencies are 60 cycles per min. at the front and 75 cycles per min. at the rear, an arrangement said to prevent the building up of pitching moments. Damping is provided by Woodhead-Monroe telescopic units; the rear axle is located and driving and braking torque are taken by an A frame acting on the bottom of the axle casing, two radius arms connected to the top of the casing and a transverse Panhard rod behind the axle.

Steering is by Burman recirculatory-ball gear and features in the design to reduce the effort required in steering without power assistance and also to reduce maintenance requirements are Glacier p.t.f.e. bearings for king pins and idle levers, taper-roller bearings to take king-pin thrust and sealed steering joints packed with molybdenum disulphide grease. Standard tyres are 11.00-20 at the front and 10.00-20 twins at the rear, all on 7½-in. wide rims.

Disc Brakes

The brake discs are Chromidium iron castings of 12½-in. effective diameter, those on the rear being slotted radially to reduce weight and also to induce a flow of air through the discs and across the hubs. Basically Girling brake design is used, although some of the parts are manufactured by Guy Motors. Two calipers, each with four 2.52-in. dia. pistons and two segmental friction pads are fitted to the rear brakes, while the front brakes have one caliper, each with four 3-in. dia. pistons.

The brakes are hydraulically operated through two master cylinders, one serving the brakes of each axle and both connected directly to the pedal by a single cross link. Pedal action on both master cylinders is assisted by air pressure directly proportional to the pressure exerted on the pedal through the use of two Clayton Dewandre Airpaks



Close-up of the front entrance of the Wulfrunian showing foot of staircase (right) and large luggage space (centre)

the Cave-Browne-Cave engine cooling—interior heating system—which makes the maximum use of engine waste heat and eliminates the conventional radiator.

Chassis Construction

The Wulfrunian is based on frame sidemembers 8 in. deep and $\frac{1}{2}$ in. thick, with $3\frac{1}{2}$ in. flanges, braced with 10 pressed-steel crossmembers, assembled by bolting and reinforced by fitch plates at the unions. Two of the crossmembers are of heavier section and are used to support the independent front suspension. Seven outrigger members are fitted at each side, enabling bodywork to be partially integrated with the chassis. Fulfilling its primary function as a 30 ft. by 8 ft. double-deck bus, the chassis has a wheelbase of 15 ft. 4 in., with a 7-ft. front overhang to accommodate a wide front entrance forward of the wheel housing. Other versions with varying dimensions for different purposes will be available. The design



Guy Wulfrunian chassis featuring Gardner 6LX engine, semi-automatic gearbox, disc brakes and air suspension all round fitted with Roe 75-seat body, one of 25 for West Riding Automobile Co., Limited

of the air suspension and the use of a stepped-up double-reduction rear axle has made possible a frame height only 1 ft. $6\frac{1}{2}$ in. above ground level. This height remains substantially constant irrespective of loading because of the self-leveling characteristics of air suspension.

The vertical engine is positioned forward of the front axle and is cantilevered from the stout cross-members forming the front-suspension mountings in such a way that its weight preloads the centre section of the frame in an upward direction; thus the bending moment in the frame tends to be reduced as the bus is loaded. The engine is carried on two bonded-rubber sandwich mountings at the forward end and two Metacones at the rear. Standard alternative engines are the Gardner 6LW (112 b.h.p. at 1,700 r.p.m.), Gardner 6LX (150 b.h.p. at 1,700 r.p.m.), Leyland O600 (125 b.h.p. at 1,800 r.p.m.) or Leyland O680 (150 b.h.p. at 2,000 r.p.m.).

Mounted with the engine is an 18-in. fluid flywheel or a 16-in. single dryplate friction clutch depending on the type of transmission specified.

—a combined hydraulic cylinder, air-pressure diaphragm and air reservoir—charged by a Clayton Dewandre Tu-Flo compressor.

The transmission handbrake is a 9-in. Girling two-leading-shoe drum brake mounted on the nose of the bevel pinion. It is connected by rods and a new type of Bowden frictionless cable, comprising a steel strip running in a ball-bearing track, to the lever.

The use of air suspension and disc brakes has resulted in an overall weight saving of about 1½ cwt., the company claims. The weight of the 30-ft. Wulfrunian chassis with 35-gal. fuel tank ready for operation is a little over 5 tons, giving, with adequate allowance for a 75- to 78-seat double-deck body, a running tare of about 8 tons. Fully loaded, the weight distribution would be about 6 tons over the front axle and 7 tons over the rear.

Collaboration in the design stage has been accorded by a number of British operators, principally by the West Riding Automobile Co. (Continued on page 17)

POWER PLUS PAYLOAD

...for the motorways of today...



Operated by A.G. McFadden & Co., Ltd., Rutherglen, Glasgow, an A.E.C. 14 tons gross "Mercury" used for steel transport.

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With a lively 112 b.h.p. engine for sustained power, a top load capacity, and years of proved reliability the A.E.C. "Mercury" 12-14 tonner is built for the motorways of today and tomorrow. The A.E.C. "Mercury" will take payload of up to 10 tons, travel fully loaded at 50 m.p.h. and keep going without strain mile after mile, day in day out. That is why it is ready now to meet the operating challenge of Britain's new fast highways. Without doubt the "Mercury" is still the cheapest to run of all "middleweights" on long or short hauls.



In the growing A.E.C. fleet of Cotter's Motor Tours Ltd., Glasgow—a "Reliance" with Plaxton "Panorama" luxury body.

"RELIANCE"

No other British coach can claim so many awards as the A.E.C. "Reliance"—55 in British Coach Rallies in five years, 6 awards in Continental Rallies in two years.

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AT THE SCOTTISH MOTOR SHOW



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Bedford's extra-long 7-tonner

An extra foot on the wheelbase, an extra two feet on the body, giving a clear 18 ft. inside length! This puts the Bedford 7-tonner, already leader in its class, still further ahead in the big-load-carrying field . . . Look it over, this sturdy made-to-take-it job; it has everything . . . 10-inch-deep frame now stiffened with six cross-members. Forward control, all-round vision, superlative brakes. A choice of three engines: 300 cu. in. petrol, 300 cu. in. diesel or 350 cu. in. diesel. Comfort and easy handling to please the driver. Economy in maintenance and running costs to please the owner. Yes, where there's a lot to carry, in bulk or weight, on long haul or short, Bedford's *extra-long* 7-tonner is the truck for the job.

EXTRA LONG 7-TONNER

Wheelbase 168 in.
Inside body length 18 feet
Inside width 7 feet
7-ton extra long dropside lorry
with 300 cu. in. petrol engine £1,148
with 300 cu. in. diesel engine £1,273
with 350 cu. in. diesel engine £1,573

and Bedford's new 12-ton tractor

Here's the latest and largest of the Bedford haulage family — a tough 12-ton giant that puts its operator in easy command of big loads on tight schedules. In every detail of its well-thought-out design, in its exceptional manoeuvrability, in its readiness for all road conditions (with 5-speed gearbox and 2-speed rear axle, a total of *ten* forward speeds!), in its economy, its safety, its solid dependability, this newcomer is a worthy mate to the famous Bedford 8- and 10-ton artics. Same nation-wide service behind it, too, from the network of authorised Bedford dealers, with low-priced parts available at all points.

Full details of either of these notable Bedfords from your local dealer or direct from Vauxhall Motors Ltd., Luton, Beds.

12-TON TRACTOR
Gross train weight, 38,500 lbs.
350 cu. in. diesel engine
Extra heavy rear springs
Five-speed heavy-duty gearbox
2-speed rear axle
Wheelbase, 86 ins.
Turning circle, only 34 ft.
Price £1,554

...better buy Bedford

Commercial Vehicles at Kelvin Hall

(Continued from page 3)

vehicles include a Reliance fitted with Duple Britannia luxury coach body and an A.E.C.—Park Royal 74-seat low-height Bridgemaster double-decker.

John Mitchell, of Greenock, Limited, shows a Gardner 5LW-engined Atkinson 9-ton capacity lorry on Stand 108, while Atkinson Lorries, Limited, is exhibiting a 10-ton tipping chassis-cab and a long-wheelbase six-tonner at the site of its new works at Airdrie for the duration of the show.

Bedford 12-ton Articulator

Among the 12 Bedford vehicles appearing on various stands the new 12-ton capacity articulated tractor makes its debut on Stand 84, where it is

Gipsy are shown on Stand 89 by Lamb's Garage, Limited; A. C. Penman, Limited, shows examples of its own coachwork—a mobile shop—on a 1½-ton chassis and a 7-ton chassis-cab on Stand 93; an Omnivan and one of the new Series 4 three-tonners are shown on Stand 96 by Moir and Baxter, Limited; Carlaw (Cars), Limited, has a 1.w.b. forward-control 5-ton lorry and a 1½-ton diesel van on Stand 97; and the Austin round-up is completed on Stand 108, where John Mitchell, of Greenock, Limited, also shows one of the new three-tonners.

Turbocharged Daimler

Two examples of Daimler double-deck buses are shown by Transport Vehicles (Daimler), Limited.



A Gardner 6LX-powered Seddon DD8 with Thompson Bros. 3,500-gal. acid tank, one of a recent order for two—a similar chassis is shown on the Seddon stand; right, a Guy Warrior tipper, temporarily withdrawn from service to appear on the Guy stand

shown by Scammell Lorries, Limited, coupled to a Scammell 12-ton semi-trailer. The new tractor is developed from the existing 10-ton unit and is designed for a gross weight of 17 tons 3 cwt. It is powered by the Leyland O350 diesel engine which drives through a 13-in. clutch, heavy-duty five-speed gearbox and Bedford two-speed rear axle. Vacuum servo-hydraulic brakes provide a lining area of 498 sq. in. on the tractor and provision is made for the trailer brakes. The price of the tractor in the United Kingdom is £1,554.

Other vehicles in the Bedford range are well covered on Stand 99, where S.M.T. Sales and Service, Limited, shows a Duple Super Vega 41-seat coach, a 4-ton platform lorry, a 7-ton forward-

on Stand 113, one a complete CSG6-30 vehicle with 73-seat Northern Counties forward-entrance body and the other a CVD6-30 chassis. The first is powered by the Gardner 6LW diesel engine driving through a friction clutch and David Brown all-synchro mesh gearbox. The chassis features the Daimler CD6 Mark VIII diesel, which has standardised equipment to suit it for operation naturally aspirated or turbocharged. Daimatic semi-automatic transmission and diaphragm-operated Bendix-Westinghouse air brakes with automatic strut adjusters.

The chassis provides good opportunity of studying modern practices, having also automatic chassis lubrication, fuel and chassis oil pipes of easily replaceable nylon tubing and a semi-full front of structural plastics. Other Daimler exhibits also illustrate modern trends, comprising a CD6 engine equipped with the B.S.A.-designed (now taken over by C.A.V.) exhaust-gas turbocharger, a Daimatic four-speed semi-automatic electro-pneumatic epicyclic gearbox and an improved strut-type automatic brake adjuster claimed to be unaffected by dirt or heat, which the Daimler company manufactures under exclusive licence from the Clayton Dewandre Company.

New Dodge 12-ton Tractor

Dodge Brothers (Britain), Limited, introduces a new Dodge 12-ton articulated tractor and higher-powered 6-ton chassis on Stand 125 while other vehicles in the current range from Kew are shown on two further stands. The

12-ton tractor on show is a forward-control type and is powered by the Leyland O375 diesel engine—the biggest ever used by the company—though alternatives available in the chassis, which has an 8-ft. 4-in. wheelbase and is designed for a gross weight of 40,320 lb., are the Perkins Marine II R6 or the Leyland O350. Other features are hydraulically operated 14-in. clutch, five-speed gearbox, electrically operated Eaton 18,500 two-speed axle and alternative air-hydraulic or vacuum-hydraulic brakes.

The developed six-tonner is powered by the latest Perkins Six 305 diesel engine, which develops 89 b.h.p. at 2,600 r.p.m. and maximum torque of 218 lb./ft. at 1,250 r.p.m., in place of the earlier P6. The new engine also features chrome-faced cylinder liners and the C.A.V. DP distributor fuel-



Scammell Scarab 3-ton tractor, seen at the show fitted with the alternative Perkins Four 99 diesel engine

control tipper and a Kenex conversion of the CA van; by Mackay and Jardine, Limited, on Stand 107, with one of the new long-wheelbase vans, a Martin Walter Workbus on the 10-12 cwt. chassis, a 6-ton normal-control lorry and a forward-control 7-ton tipper; and on Stand 122, where Watson Bros. (Airdrie), Limited, has a normal-control 7-ton tipper and two examples of the Bedford light van versatility, namely a Martin Walter 12-seat Utilibus and a Smith's Cornette Mobile Shop. On Stand 100 Croall and Croall shows a gown van on a 15 cwt. chassis.

Unique B.M.C. Cab

An outstanding feature of a new B.M.C. range of goods vehicles in the 2- to 4-ton class bearing both Austin and Morris brands is a new cab



On the John Gibson stand this Leyland Comet passenger chassis mounting a 23-ft. by 7-ft. 6-in. by 9-ft. 6-in. pantechnicon body in light alloy and structural plastics appears

designed to provide great comfort and safety and unusually easy access. The range is described and illustrated on page 25 of this issue and examples can be seen among the Austin and Morris Commercial vehicles exhibited on a number of stands, while the Westfield Autocar Co., Limited, has a sectioned version of the new Morris chassis and cab on Stand 110. Westfield Autocar has three other Morris Commercial vehicles on view, which with the displays by McLay's Garage, Limited, Stand 80, Fife Motor Co., Limited, Stand 81, William Gillespie and Son, Limited, Stand 82, A. and D. Fraser, Limited, Stand 109, combine to represent the whole range from the 5-cwt. van to the forward-control 7-ton lorry, with a wide variety of body types.

The Austin range is also comprehensively covered; Taggarts (Motherwell), Limited, on Stand 86 shows a 7-ton chassis-cab; a high-top mobile shop on the Omnivan and a four-by-four

injection pump with hydraulic governor. Two Dodge seven-tonners, a tipper and a long-wheelbase platform lorry, and a 6-ton forward-control tipper can be seen on Stand 111, where they are shown by Ritchies, Limited. James Bowen and Sons, Limited, on Stand 118, shows the new Bonallack combined tipper and detachable bulk cement carrier mounted on an O350-powered Dodge 7-ton chassis.

Two examples of the Dennis Pax III are shown by Dennis Bros., Limited, on Stand 120, one a long-wheelbase forward-control chassis and the other mounting a 900-gal. lubricating-oil dispenser. A Pax II 13 ft. 2 in. wheelbase chassis and cab is shown by Central Motors (Calderbank), Limited, on Stand 119.

Medium- and large-capacity E.R.F. vehicles are shown on Stand 118 by James Bowen and Sons, Limited, a Gardner 5LW-powered chassis and cab (Continued on page 19)

On inter-regional freight service

Illustrated above is one of ten Type

"I" 800 h.p. diesel electric locomotives supplied by the North British Locomotive Co., Ltd. to the British Transport



**SPHERICAL
ROLLER
BEARING
AXLEBOXES**

Commission for transfer and freight duty on the Eastern Region of British Railways. These, together with an additional fifty-eight Type "2" 1,100 h.p. diesel electric locomotives on order from the same builder, are equipped with SKF self-aligning spherical roller bearing axleboxes.



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OVER ONE MILLION SKF ROLLER BEARING AXLEBOXES HAVE NOW BEEN SUPPLIED TO THE RAILWAYS OF THE WORLD

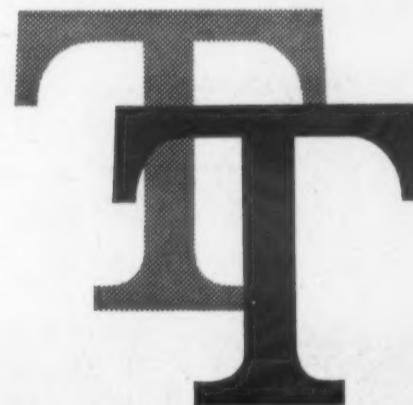
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AT THE SCOTTISH MOTOR SHOW

KELVIN HALL

GLASGOW

NOV. 13-21



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NOVEMBER 14, 1959

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OFFICIAL NOTICES

EAST KENT ROAD CAR CO., LIMITED

ASSISTANT ENGINEER

THE East Kent Road Car Co., Limited, invites applications for the position of Assistant Engineer in the Chief Engineers' Department at Canterbury.

The Company, which has its headquarters at Canterbury, operates some 600 buses and coaches on stage and express services in East Kent and East Sussex.

Applications, which will be treated in strict confidence, should give:—

- (a) particulars of age, education, technical and other qualifications;
- (b) a summary of the applicant's experience, including details of past and present appointments; and
- (c) present salary.

Applications should be addressed to the General Manager of the Company at Harbledown, Canterbury, to be received not later than Monday, November 30, 1959.

NORTH WESTERN ROAD CAR CO., LIMITED

STORES CONTROLLER

NORTH Western Road Car Co., Limited, invites applications for the position of Stores Controller at its headquarters at Stockport. The Company operates a fleet of some 600 public service vehicles. Applicants must have knowledge of purchasing, stock control and stores accounting. The commencing salary will depend on the qualifications and experience of the successful candidate and will not be less than £1,000 per annum. The appointment will carry membership of a contributory pension scheme.

Applications, stating age, whether single or married, education, present salary and details of present and previous employment, should be sent under cover endorsed "Stores Controller" to the General Manager, North Western Road Car Co., Limited, Charles Street, Stockport, to arrive not later than November 25, 1959.

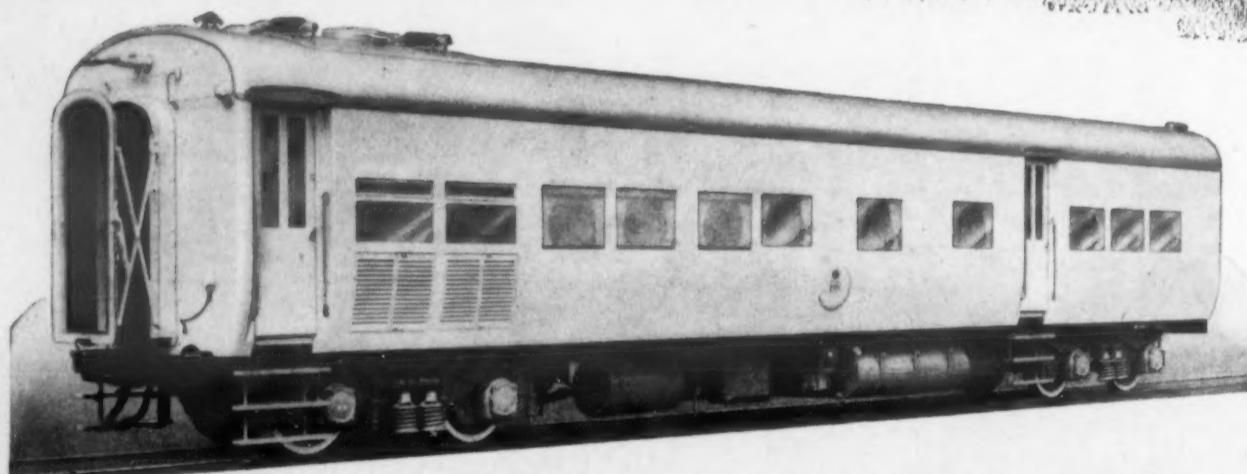
CLASSIFIED ADVERTISEMENT

RATES.—The minimum charge for classified advertisements is 7s. for 14 words or less, and 6d. for each additional word. The name and address of the advertiser is charged at the same rate. If a box number is used 2s. extra is charged to cover our name and address and postage. If set in paragraph form each paragraph is estimated separately. Official Notices and semi-display in the classified columns are charged at the rate of 40s. per single column inch.

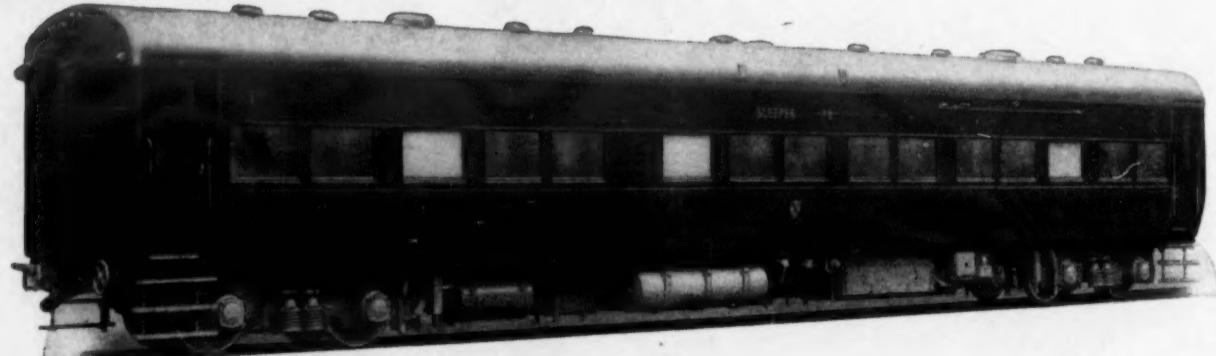
SITUATION WANTED

R. A.S.C. OFFICER (47) seeks opening in road haulage organisation as transport/distribution or warehouse manager or assistant thereto anywhere in U.K. or overseas. Write Box No. 3823, MODERN TRANSPORT, 3-16 Woburn Place, London, W.C.1.

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Special Saloon
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H.E. THE GOVERNOR
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1st Class Sleeper Car
one of 122 coaches
comprising nine
different types
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THE **BIRMINGHAM**

RAILWAY CARRIAGE & WAGON CO. LTD.
TELEPHONE SMETHWICK-1881
Smethwick
TELEGRAMS 'CARRIAGE SMETHWICK'

COMMERCIAL VEHICLE TEST

Albion Reiver Double-Drive Six-Wheeler*

FOR OPERATION AT 15½ TONS GROSS WEIGHT

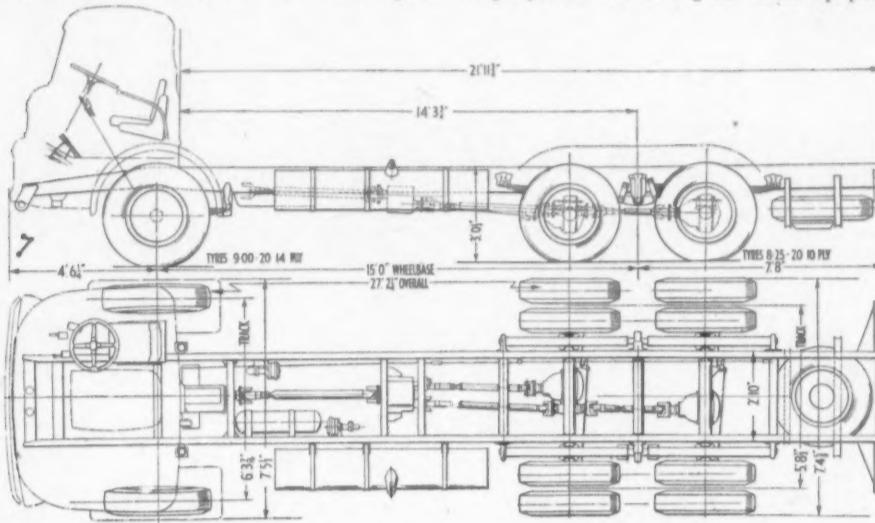
DESIGNED originally for medium-weight hauls in countries where there are restrictions on axle loadings, the Albion Reiver light six-wheel goods chassis has, rather surprisingly in view of the general trend away from rigid six-wheelers in favour of articulated types, won a good deal of popularity at home as well as in overseas markets. The principal reason for this popularity, which has now reached the proportions that bring the Reiver into the best-seller class, is probably to be found in the traditional sturdy construction of Albion vehicles—as much in evidence in this as in other of the company's products—which permits the short-sighted operator to overload without incurring the penalties that often attend this all-too-common malpractice.

Another reason is that in its latest manifestation, the Reiver is designed for a maximum gross

high-tensile steel pressed channel section $9\frac{1}{4}$ in. by $2\frac{1}{2}$ in. by $\frac{1}{8}$ in., braced with stay tubes and pressed crossmembers bolted in position. The long-wheelbase and tipper versions are strengthened by the fitting of inverted L-shaped flitch plates. Spring hanger brackets have been linked up where possible with crossmembers and the semi-elliptic springs are 54 in. long at the front and 46 in. long at the rear, where two springs each side link up with a rocking beam carried in large trunnion bearings. Standard tyres are 9.00-20 14-ply at the front and 8.25-20 10-ply twins at the rear.

Steering and Brakes

Steering is by Marles cam-and-double-roller gear having a ratio of 28.5 to 1 and is controlled by a 21-in. dia. wheel. The braking system employs wedge-operated two-leading-shoe drum equipment



Drawing of the Albion RE.25N Reiver chassis giving principal dimensions

weight of 15½ tons and thus usefully fills a gap in haulage requirements falling between those dealt with by the maximum-weight four-wheeler and maximum-weight six-wheeler. Add to this a double-drive bogie, with inter-axle differential having air-operated locking mechanism operable from the cab, which combines maximum traction on poor surfaces with economical operation on hard roads, and the wide use of well-proved Albion and Leyland running units, and the reason for well-filled Reiver order books is clear.

Uplifter of Goods

Reiver is an old Edinburgh word meaning an uplifter of goods (on the Border, we understand, it

on all wheels with air pressure-assisted actuation. The system employs an engine-driven compressor, large reservoir and two air chambers and master cylinders, to which compressed air is admitted in response to a valve controlled by the brake pedal. The total lining area is 840 sq. in. (54 sq. in. per ton of gross weight), while a Neate-type multi-pull handbrake having a lining area 586 sq. in.

The Reiver is powered by the Leyland O375 direct-injection diesel engine, a six-cylinder unit set in this application to give 105 b.h.p. at the governed speed of 2,200 r.p.m. and with a maximum torque output of 285 lb./ft. at 1,100 r.p.m. Transmission is through a Borg and Beck 14-in. single dryplate

TEST RESULTS AT A GLANCE

Vehicle Details

MAKER: Albion Motors, Limited, Scotstoun, Glasgow, W.4.
TYPE: RE25N Reiver double-drive light six-wheeled lorry.

ENGINE: Leyland O375 six-cylinder direct-injection diesel; bore 4.1 (104 mm.), stroke 4.75 in. (120.7 mm.), cubic capacity 377 cu. in. (6.17 litres); 105 b.h.p. at 2,200 r.p.m., 285 lb./ft. (39.42 kg./m.) torque at 1,100 r.p.m.

TRANSMISSION: Clutch, hydraulically operated 14-in. (356-mm.) Borg and Beck single dryplate, 182 sq. in. (1,174 sq. cm.) lining area; gearbox, Albion five-speed constant-mesh, ratios 6.988, 4.308, 2.655, 1.605 and 1 to 1 forward, 6.348 to 1 reverse, overdrive 0.75 to 1, six speed available optionally; drivehaft, Borg and Beck optional through 1 to 1 relay gearbox with lockable third differential; rear axles, two Albion double-reduction with 6.932 to 1 ratios.

BRAKES: Compressed air servo-hydraulic all wheels, total lining area 840 sq. in. (54.19 sq. cm.). Multi-pull handbrake mechanically connected to rear four wheels.

TYRES: 9.00-20 14-ply front, 8.25-20 10-ply twins rear.

WHEELBASE: 15 ft. (4.57 m.).

WEIGHT: Chassis and cab in kerb trim about 4 tons 18 cwt. (4,978.6 kg.)

Test Results

ROUTE: Hilly route based on Glasgow-Stirling Road.

CONDITIONS: Cool and showery.

RUNNING WEIGHT: 15 tons 16½ cwt. (16,066 kg.) plus crew of two.

LOAD: 10 tons 5 cwt. (10,414 kg.), assuming 10 cwt. for platform body.

FUEL CONSUMPTION: Over 20-mile out-and-back route continuous running 11.3 m.p.g. (4 km./litre) at 29 m.p.h. (46.4 k.p.h.) average speed.

GROSS TON/M.P.G.: 178.5 (64.2 tonne/km./litre).

PAYOUT TON/M.P.G.: 115.8 (41.7 tonne/km./litre).

MAXIMUM GRADIENT CLIMBED: 1 in 5 (20 per cent).

TURNING CIRCLE: About 58 ft. (17.68 m.) wheeltrack.

ACCELERATION:

Average times for four runs, two in each direction, through gears:

0-20 m.p.h. 21.8 sec.

0-30 m.p.h. 52.8 sec.

in direct drive:

10-20 m.p.h. 25.2 sec.

10-30 m.p.h. 54 sec.

Braking: Average distance to stop from 30 m.p.h. on dry tarmac 69 ft. (21 m.); equivalent to 14 ft. per sec. per sec. or 0.435 g. overall deceleration. Don meter readings 52.56 per cent. Tapley meter readings 55.70 per cent.

ESTIMATED TOP SPEED: 48 m.p.h. (77 k.p.h.).

OVERHAUL FUEL CONSUMPTION: For 74 miles fairly hilly route, including 10 miles in Glasgow traffic and numerous stops in various tests, 9 m.p.g. (319 km. per 100 litres).

had a less-respectable connotation) and we congratulate Albion Motors, Limited, on having found such an apt Scottish name for a sound Scottish product. The Reiver we tested recently in the Glasgow-Stirling area certainly uplifted 10½ tons of goods over a 75-mile fairly hilly route with a great show of spirit and commendable economy.

The current Reiver range comprises three chassis of forward-control type, two for haulage roles with mean wheelbases of 15 ft. (RE.25N) for 21 ft. 6 in. long body and 16 ft. 8½ in. (RE.25L) for 23 ft. 9 in.

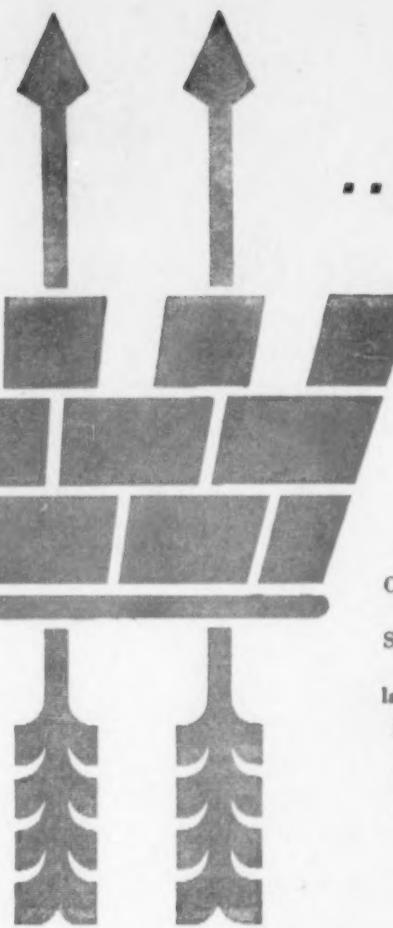


An easy start on a 1 in 5 gradient was made by the Reiver loaded to the full gross weight

body, and one for 16 ft. 6 in. tipping body (RE.25T) with a mean wheelbase of 12 ft. 2 in. All are for an overall width of 7 ft. 6 in. and a maximum gross weight of 15½ tons. Right- or left-hand control is available and the chassis takes the latest Albion pressed-steel forward-control cab, features of which include easy entry by means of an enclosed step in the cab floor and a large area of glazing for maximum all-round visibility.

The chassis frame comprises side-members of

(Continued on page 26)



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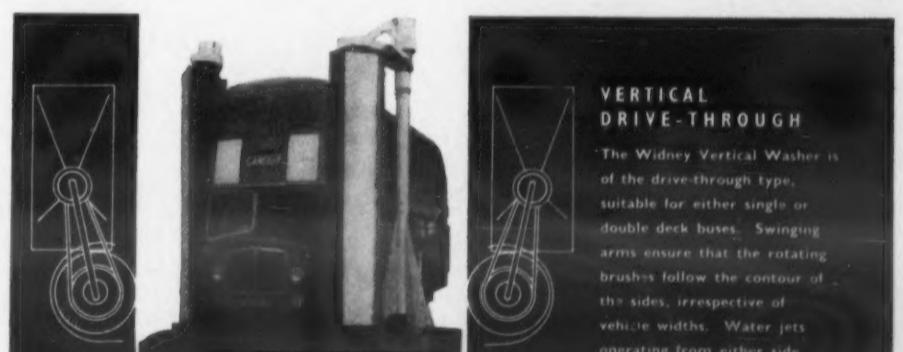
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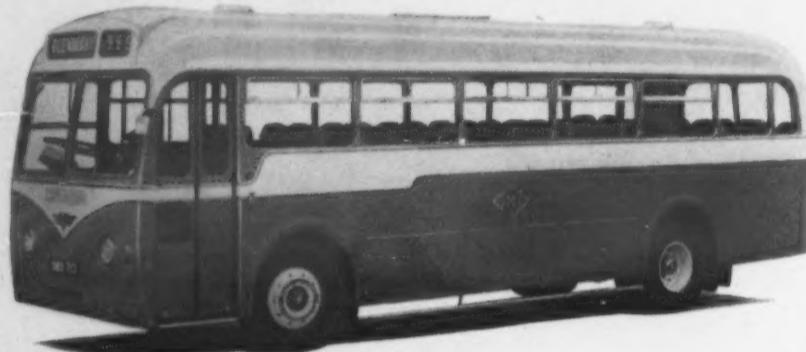
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NEWS FROM ALL QUARTERS

Farewell to Leeds Tram System

Leeds said goodbye to 88 years of tramway operation on the evening of Saturday, November 7, when a convoy of 10 trams left the Swingate depot to travel in turn over the remaining routes to Cross Gates and Templenewsam. Normal tram services were withdrawn during the day.



Second Clyde Tunnel Authorised

Glasgow Corporation has been authorised to invite tenders for the second bore of the Whiteinch—Linthouse road tunnel beneath the Clyde. Work on the first bore began in June, 1957, and is due to be completed at the end of 1961. The cost of the entire scheme is now put at £10.3 million.



Transport in the Frozen North

The White Pass and Yukon Corporation has formed a new transport company in Canada. Called Arctic Oilfields Transport, Limited, it is a joint venture with a firm of Yukon contractors, and has been formed to provide winter wheeled transport for drilling equipment and supplies for oil companies.



Setback to Manchester Road Scheme

Failure to secure the passage of the necessary resolution in the town council means that Manchester Corporation will not be able to promote the Parliamentary Bill seeking authorisation for its elevated road scheme, described in our October 24 issue. A delay of 12 months will therefore ensue. Opponents of the road scheme suggested that more time be allowed to consider the financial aspects in the light of other heavy commitments.



Cross-Country Diesel Service

An hourly interval service of diesel trains between Liverpool and Leeds with certain of the trains running through to Hull, is planned to come into operation before the end of next year. The service will be provided by self-contained six-car diesel multiple-unit trains providing 60 first-class and 232 second-class seats as well as a buffet car. There will be up to seven intermediate stops, at Earlestown, Manchester, Stalybridge, Huddersfield, Leeds, Selby and Brough.



Covent Garden Market Legislation

Legislation to set up the proposed Covent Garden Market Authority, is to be introduced as soon as possible, according to a Government White Paper published last week. The Authority is to take over and operate the market. The first step will be to provide accommodation outside the market area where empty containers and produce in bulk can be stored and handled. As announced earlier, a site for a market storage annexe has already been found about two miles from the market at the junction of Old Street and City Road, Finsbury. The Authority will acquire the freehold of the existing Covent Garden properties and the charter of 1670 under which it has operated will be extinguished. A new market would be constructed in the area.

North-East Stations Closing

Passenger facilities will be withdrawn from Picton and Yarm Stations on the Northallerton—Eaglescliffe line in the North Eastern Region on and from January 4, 1960. Leamington goods station will be closing on the same date.



Irish Railway Sold Up

Disposal of the Sligo, Leitrim and Northern Counties Railway was completed last week when the auctioneers put up for auction the building and lands at the four stations at Manorhamilton, Dromahair, Glenfarne and Cooeoney.



Power Alcohol Fuel in Pakistan

The Ministry of Industries in Pakistan is drafting legislation to authorise the mixture of 20 per cent of power alcohol to petrol. Plant to extract power alcohol from molasses already exists in Peshawar. The legislation will authorise the oil companies to mix 20 per cent of alcohol to petrol and will result in cutting down the import of petrol.



London, Tilbury and Southend Electrification

A further stage of the work on the Barking reconstruction scheme, being carried out in connection with the electrification of the London, Tilbury and Southend line, was completed on November 9 when the dive-under and flyover to carry westbound District Line trains under and over the main Fenchurch Street—Southend lines was brought into use, providing cross-platform exchange between London, Tilbury and Southend line trains and District Line services at Barking Station for passengers travelling to London. Demolition of old station buildings has now commenced.



Parking Meters throughout Mayfair

The Minister of Transport has now approved in principle a scheme submitted by Westminster City Council to extend parking meters to the whole of the Mayfair area. This area is bounded by Oxford Street, Regent Street, Piccadilly and Park Lane. Parking meters are at present in operation only in the north-western corner of Mayfair and the adjoining part of St. Marylebone. The scheme also provides for loading and unloading bays and associated waiting restrictions, such as a complete ban on parking near certain busy intersections indicated by a continuous yellow line.



Railways after Lea Valley Traffic

In order to supply transport for light industry in the Lea Valley area of north-east London, the Great Eastern Line has introduced a new class C named freight train, the *Lea Valley Enterprise*. Diesel-hauled and fully braked, it picks up at Tottenham, Angel Road, Ponders End, Brimsdown, Waltham Cross and Broxbourne. Leaving the area at 5.7 p.m., the train gives next-morning arrivals at many towns in the Midlands and the North and, it is stated, arrivals in Edinburgh and Glasgow at midday on the day after dispatch. Containers are a particular feature of the new service.



Sketched at the Homalloy Works

Putting the finishing touches to a cab on an Atkinson chassis. The cab is fabricated from structural plastics, using Beech Polyester Resin. Holmes (Preston) Ltd. make wide use of this modern body-building technique.

Sketch by John Ross, copyright of:

B.I.P. Chemicals Limited - Oldbury - Birmingham



COMMERCIAL AVIATION
B.E.A. Revises Holiday Fares
HELICOPTER NEWS

A LARGE proportion of British European Airways flights to the Channel Islands next summer will be operated with 60-70 seat Viscount turboprop air liners and will offer certain lower fares as an inducement to holidaymakers to avoid the Saturday travel peak. The increased use of Viscounts will substantially increase the number of seats available, especially on direct flights from the provinces, over-flying London. In an effort to spread the growing tourist traffic to the Channel Islands more evenly throughout the week, B.E.A. is to offer reductions of approximately 7 per cent on monthly return fares for flights on any day except Saturday. The except Saturday rule will apply only between July 1 and September 12 inclusive, and throughout this 10-week peak mid-summer period return fares available for flights on Saturdays will be increased by an average of 5 per cent. Saturday fares between Southampton and the Channel Islands will not, however, be increased. The former 15-day excursion fares are now extended to cover 23 days and will still be available for travel on any day of the week up to June 1 and after October 1; between these dates the excursion tickets will be valid on Tuesdays, Wednesdays, and Thursdays only. The excursion fares are unchanged.

T.C.A. Viscounts to Florida

This winter Trans-Canada Air Lines will offer first-class Viscount service between Toronto and Tampa. This is the first time the airline has operated Viscounts to the south. The flight leaves Toronto on Wednesdays until November 17 when a second weekly Viscount flight will be added. Twice daily Viscount flights between Toronto and Florida will begin December 1. The Viscounts will cut flying time between Toronto and Tampa to 4 hr. 10 min. The airline will continue to operate North Star tourist flights between Toronto and Tampa, starting with one weekly return flight on November 14 and increasing to eight weekly by December 11.

Too Many Aircraft Manufacturers?

The views of the new Minister of Aviation, Mr. Duncan Sandys, about the situation of the aircraft manufacturing industry were succinctly expressed in an answer he gave on November 9. Mr. Sandys said the fact was that there were too many firms chasing too few orders at the moment. Moreover, he had no plans for expanding the production of aircraft; the rising civil demand could not for some time make good the decline in military orders. There was no doubt that the majority of the manufacturers recognised that some extensive reorganisation of the industry was essential and urgent, and he would do everything to help them and encourage them to carry out that reorganisation.

Silver City Integration

Silver City Airways has announced the complete integration of the Manston-based fleet of four-engined pressurised Hermes aircraft into its southern passenger division. Simultaneously, it announced two new appointments stemming from its planned increase in flying from Manston in 1960. With effect from November 1 Mr. R. M. Hackney has relinquished his post as operations manager, passenger division, Ferryfield, and has been appointed base manager, Manston. Mr. J. R. Dixon has been appointed operations superintendent, Manston. He is responsible to Mr. Hackney for the day-to-day running of the operations section and to the operations director (through the group flight manager) for carrying out group policy on operational matters.

Westland Helicopters for the Queen

Two Westland Whirlwind helicopters which had been ordered for the Queen's Flight were handed over by Mr. E. C. Wheeldon, managing director, to Wing Commander R. G. Wakeford, O.B.E., A.F.C., the Flight's commanding officer, at Yeovil, on November 5. These are the first helicopters to be ordered specially for the Queen's Flight. Hitherto, helicopters used for Royal flying have been loaned or detached from the Royal Navy or Royal Air Force. Designated HCC Mark 8, the Whirlwinds are powered by the latest mark of Alvis Leonides "Major" piston engine, delivering 750 b.h.p. Apart from special fittings and additional items of equipment they are standard machines incorporating different features from various marks of Whirlwind now in Service and civil use. Special technical features include a fully duplicated primary control system and an automatic emergency servo-assisted system, providing double insurance against failure, this being a combination of military and civil requirements. Ten-channel v.h.f. radio and single-channel standby sets are carried. Both aircraft are fitted with the Decca Navigator and Flight Log, a navigational system which utilises pictorial presentation to provide the pilot with continuous information as to his position and course.

More Rotorport Route Proposals

Rotorports, Limited, has made application to the Air Transport Advisory Council for licence to operate regular scheduled helicopter passenger and freight services over a horseshoe route—Portsmouth—Ryde—Sandown/Shanklin—Newport—Cowes—Southampton. If granted, the service is scheduled to commence operation on May 15 next and will be operated by the Rotorports associate company Inter-City Airways, Limited. The application is at present before the A.T.A.C. and is a revision of the previous application made to operate a Central London—Portsmouth—Isle of Wight—Southampton route. It is not now intended to operate the London—Portsmouth sector until larger transport helicopters become available. At least one Westland S55 helicopter would be acquired for the new service and would be operated as a nine-seat machine. Operation will be from special heliports, which will be provided for the service by Rotorports. The company has recently concluded negotiations with Southampton Corporation for the leasing of the Southampton Heliport adjacent to the New Docks and Civic Centre. This site will be operated on a permanent basis as a full public use heliport, with full facilities for visiting helicopters and passenger handling. Negotiations are at present in an advanced stage with the City of Portsmouth and the Isle of Wight County Council, for the remaining sites. On November 7 full-scale proving and demonstration flights were held for the benefit of the respective civic authorities and local and national press, operated by a Westland Widgeon helicopter owned by Executair, Limited, an affiliated company.

SCOTTISH VEHICLE MANUFACTURE



Mr. STANLEY MARKLAND, O.B.E.,
M.I.Mech.E., M.S.A.E.

* * * * *

Since Mr. Stanley Markland assumed the managing directorship of Albion Motors, Limited, in May, 1957, that flourishing Scottish vehicle manufacturer has doubled its output, introduced an entirely new range of vehicles and turns out large numbers of units for its parent company, Leyland Motors, Limited. Involving expenditure of nearly £2 million upon re-tooling and extension of production, the results of the programme have been to make the company one of the few in the Glasgow area to maintain a steady recruitment of labour and also to refute any suggestion that Scottish factories under English control tend to fare less well. Joining Leyland Motors, Limited, as a trade apprentice in 1920, Mr. Markland soon distinguished himself by winning, in the following year, the first engineering scholarship to be granted by the company. After taking up a position in its research division, he became research engineer in 1937 and was appointed assistant chief engineer in 1942. Thereafter he was made chief engineer in 1945 and in the following year joined the board of Leyland Motors, Limited. In 1953 he was appointed works director, a post which he still holds and which involved control of the production division, including works engineering, buying and inspection. During the 1939-45 war he was engaged in tank development, visiting America in this connection on behalf of the British Government. He was responsible for design and development work on tanks undertaken by the company, including the parent design of the Cromwell tank and later the design of the famous Comet tank. For this work he was awarded the O.B.E. in the New Year Honours List in 1945. As chief engineer in the immediate postwar period he was an exponent of the larger diesel engine for bus and lorry operation and created the Leyland range of postwar vehicles, powered by the now famous O600 direct-injection four-stroke diesel. Later he developed a smaller version of this engine for the Comet cruiser-weight lorries, while the design of the initial series of underfloor-engined buses was also developed under his supervision. Mr. Markland is director of various subsidiary companies within the Leyland Group and has travelled extensively, particularly in the western hemisphere.

IN PARLIAMENT

No G.V. Licensing Moves

VEHICLE NOISE TESTS

ANSWERING his first question regarding the growth of ancillary transport, Mr. ERNEST MARPLES, the Minister of Transport, said he did not at present propose to take any action in regard to the system of licensing for goods vehicles. He promised to look at the Ministry of Transport report on its sample survey of goods vehicle operations in 1958.

More Traffic Engineering Study

On traffic control and the parking problem, the Minister of Transport said: "It will be my policy to see that the road system is used to best advantage through the increased application of traffic engineering methods. I shall support schemes for the strict control of street parking wherever these may be justified."

Ministry of Transport Tests Start Next February

The Minister of Transport said he intended to start operating the statutory testing of motor vehicles (including light vans) on a voluntary basis not later than the end of February next and to allow a reasonable time thereafter before making it an offence for a 10-year-old vehicle to use the roads without a test certificate.

Vehicle Noise Tests

Manufacturers of all the main classes of road vehicles have been asked to take part in a series of Ministry of Transport tests, already under way, on the noise emitted from their products, the Minister has stated. He agreed with MR. GRESHAM COOKE that it would be desirable to establish an acceptable maximum noise level in decibels rather than to rely on less precise definitions of noise. But he admitted that the police, not his department, were ultimately responsible for the enforcement of regulations.

The Roads Programme

In reply to MR. B. JANNER, the Minister of Transport said he could make no statement about the future course of the new roads programme; Mr. Janner stressed that not less than £60 million a year on roads was promised in January this year and that the programme was to be doubled over the next five years—what was the actual increase in expenditure proposed? MR. G. NABARRO pointed out that the British Motor Corporation had recently announced that it proposed to double output in the next two years to one million vehicles annually and expansion plans of other manufacturers would, he claimed, be likely to raise the present 8,500,000 vehicles to 12 million by 1963-64. What steps was the Minister going to take to ensure that growth of new motorways and major improvements of existing roads kept pace with the increase in the number of vehicles? MR. ERNEST MARPLES: "Careful account is kept of the potential increase in the number of road vehicles registered in the United Kingdom, though the volume of traffic and its concentration are more significant to road construction."

Design and Speed of Building Bridges

Besieged with requests for a statement about the design of the new Staines bridge for the by-pass, which has recently aroused much controversy, MR. ERNEST MARPLES said that the original design dated from 1939 but it was, he claimed, completely redesigned as an engineering structure to modern standards. The outline scheme for an alternative bridge, put forward by the Alderton Construction Co., Limited, fell far short of the requirements. He himself intended to visit the Continent to see bridge design there and he had, moreover, asked the president of the Institution of Civil Engineers to nominate a panel of independent bridge designers to advise him during the visit. At Staines the structure would be modern, though the facade was retained to accord with the historic surroundings. It was understood that in 1957 the Fine Arts Commission did not wish to be consulted afresh about the design, but he conceded that there had been a misunderstanding on this point.

About complaints of the time taken to complete the Chiswick flyover, he said that the overriding factor here was the need to keep 40,000 vehicles a day moving. The design, which was approved by the Royal Fine Arts Commission, made full use of modern engineering techniques, particularly in the bridge which was certainly one of the largest pre-stressed pre-cast concrete structures in the world. Concrete retaining walls were used to economise in the use of steel, which was in a relatively short supply when the design was prepared. The particular allegations of delays put forward by the contractors he had proposed should be referred to arbitration.

GUY WULFRUNIAN

(Continued from page 11)

Limited, which has ordered 25 Wulfrunian buses. Orders have also been placed by a number of other municipal and company operators. There has also been useful co-operation from Charles H. Roe, Limited (a member of the P.R.V. Group Body Sales Division), which has developed the 75-seat low-height double-deck bodies for the West Riding vehicles. These are 30 ft. long with enclosed single-step wide front entrances and full headroom to central gangways in both saloons, having an overall height of only 13 ft. 5 in.

We recently inspected and sampled the ride in one of the West Riding vehicles, for which the Gardner 6LX engine and Guy four-speed semi-automatic (no clutch pedal) gearbox have been specified. The body layout provides good luggage accommodation behind the driving compartment and a circulating area on the platform just comfortably wide enough for two separate streams to or from the lower saloon and the staircase. On a fairly cold day the Cave-Browne-Cave saloon heating and ventilating equipment provided better-than-average warmth in both saloons within a very few minutes of starting up.

There was no opportunity of forming an opinion on the general performance of the vehicle, though in a run of a few miles through Wolverhampton and on country roads near the town it went smoothly and quietly with almost a full load. But there was ample opportunity of deciding that the Guy air suspension does indeed provide a very superior ride that might well induce operators and other manufacturers to look again at designs that have been tried and so far have been found wanting in one respect or another.



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Commercial Vehicles at Kelvin Hall

(Continued from page 13)

for 31,600 lb. gross weight and a maximum capacity eight-wheeler, a 68GX powered by the 150-b.h.p. Gardner 6LX engine.

Ford Motor Company commercial vehicles are shown on no fewer than seven stands, covering the whole range of Thames goods and light passenger vehicles. Frew and Co., Limited, on Stand 77 shows a 7-cwt. van and long-wheelbase 7-ton chassis and cab; two 5-ton chassis-cabs, with 152 in. and 160-in. wheelbases respectively are shown on Stand 78 by Alexanders of Edinburgh, Limited; Wylies, Limited, has a 93-in. wheelbase Thames Trader articulated tractor and a Kenex 12-seat bus on a 15-cwt. van chassis on Stand 79. Other Fords are shown on Stands 90 and 91, occupied respectively by Paisley Motor Co., Limited, and Croft Bodybuilding and Engineering Co., Limited; George and Jobling (Glasgow), Limited, exhibits two 15-cwt. Thames vehicles—a van and a pick-up—and a 5-ton lorry on Stand 102; and a low-loader chassis-cab can be seen on Stand 124, where it is shown by James A. Laidlaw (Airdrie), Limited.

Foden Exhibits

Three examples from the current Foden range are exhibited on Stand 117 by Fodens, Limited, two of which are powered by the Mark III version of the Foden six-cylinder two-stroke diesel engine,



Two Thornycroft vehicles similar to those appearing on that company's stand are the 6-ton capacity Swiftsure with works-built plastics cab and, right, a 24-ton gross Sturdy eight-wheeler

which develops 150 b.h.p. at 2,400 r.p.m. and 365 lb./ft. torque at 1,500 r.p.m. These vehicles are a KE6/24 maximum-weight four-axle chassis and the latest K-type cab, suitable for a 24 ft. 2 in. long body, and an FED6/30 three-axle dumper for 11 cu. yd. (40,000 lb.) payload, which features double-drive double-reduction axles, a 12-speed gearbox and half-cab. The third Foden exhibited is an HG TU6/20 tractor, which is powered by the 150 b.h.p. Gardner 6LX engine, also driving through a 12-speed transmission and double-reduction axles and carrying a special tractor body with 6 tons 12 cwt. of ballast and a Darlington 70 winch.

The Gardner 6LX engine also powers a Guy Invincible two-axle tractor chassis shown by Guy Motors, Limited, on Stand 123, where it appears with a Warrior 10 ft. 6 in. wheelbase chassis fitted with six-speed gearbox and two-speed axle and carrying a 6 cu. yd. steel-lined tipping body and Telehoist gear. Both vehicles have the luxuriously appointed Guy cab, that on the tractor finished in the Murray tartan specified by its future Scottish operator. An example of the new Guy Wulfrunian double-deck bus, featuring air suspension, disc brakes and a front entrance and fitted with Roe 75-seat low-height body (described on page 11 of this issue) is available for demonstration outside.

Leyland Super Comet

A good cross-section of Leyland goods vehicles is shown on Stand 114 by Leyland Motors, Limited, and Stand 98 by John Gibson and Son,

Bantam tractor. Melvin Motors, Limited, on Stand 92 exhibits a Karrier Bantam 2-3 ton van, a Commer 7-ton tipper and a Commer 12-ton articulated tractor, both Commers being powered by the Roots 105-b.h.p. two-stroke diesel, which also features on the stand in multi-fuel form as a sectioned working exhibit.

On Stand 94 Claud Hamilton (Aberdeen), Limited, has a Commer Cob 7-cwt. van, a Commer 1½-ton diesel van and a Karrier Gamecock 3-4 ton platform lorry and completes its display with an example of the Gamecock's inclined-cylinder block diesel engine developed by Perkins to Roots requirements for under-cab mounting. Hamilton Brothers, Limited, shows a Commer Superpoise ¾-ton pick-up, a 1½-ton f.c. van, a 5-ton f.c. dropside lorry and a Karrier Bantam 2-3 ton platform lorry on Stand 95, where a sectioned Commer five-speed constant-mesh gearbox is also displayed. The 1-ton f.c. van with porous-chrome cylinder bores in the petrol engine, a forward-control 7-ton dropside lorry and a petrol-engined Bantam can be seen on Stand 104, where James Ross and Sons (Motors), Limited, also shows a sectioned two-stroke diesel engine; Stand 105 carries a Commer Express van, two Karrier Bantams, one of which is a 2-ton tipper, and a 7-ton dropside lorry, shown by the Scottish Automobile Co., Limited; and completing the display,



Here's a truly impressive list of leading commercial vehicle manufacturers who fit Ferodo Brake Linings as initial equipment on some or all of their models.

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CARRIMORE	KARRIER	TASKERS
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DYSON	MAUDSLAY	UNIPOWER
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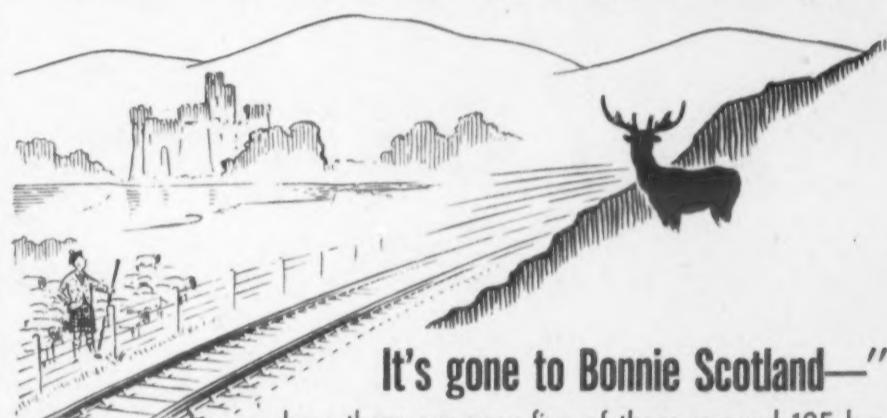
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Making a first public appearance in Britain is the Commer 7-ton lorry fitted with the multi-fuel diesel engine, here seen during its introduction at the recent Frankfurt Show

Limited, while the new Leopard chassis fitted with 41-seat Plaxton luxury coach body is shown on Stand 121 by Millburn Motors, Limited. Leyland Motors' own exhibits comprise a long-wheelbase Comet chassis with a 21-ft. long platform body built by the operator, J. and A. Smith, of Maddison, Limited, and fitted with a quickly removable 1,087 cu. ft. container built by Holmes (Preston), Limited; a Super Comet articulated tractor with Scammell fifth-wheel coupling; and a maximum weight four-axle Octopus fitted with 24-ft. Aitken platform body. Two Comets are displayed on the Gibson stand—a goods chassis fitted with platform body and a passenger chassis on which a large light-alloy and plastics pantechnicon body has been integrated with the cab.

Multi-fuel Commer

Rootes Group commercial vehicles are well shown on seven stands in the exhibition hall, while Claud Hamilton (Motors), Limited, includes in a wide range of Commer vehicles in the demonstration park a 7-ton dropside lorry fitted with the two-stroke diesel engine fitted to run on diesel oil, petrol, paraffin and jet fuels. Three KARRIER vehicles are shown on Stand 87 by T. M. Erskine and Company, a butcher's shop on a 1-ton forward-control chassis, a mobile shop on a petrol-engined Bantam chassis and diesel-engined 4-5 ton

lighter vehicles in the range and is designed for use with the Mark II automatic coupling gear, a feature of which is the braking system providing properly balanced braking effort between tractor and trailer and independent servo operation of the trailer brakes when required. Specially interesting on the Scammell stand is the 3-ton Scarab mechanical horse, which is shown for the first time powered by the Perkins Four 99 1½-litre diesel engine. Also shown are a sectioned Scarab petrol engine and a sectioned Scarab steering and suspension unit.

Seddon vehicles are shown on Stand 128 by Seddon Diesel Vehicles, Limited, on Stand 101 by Moodie and Company and on Stand 119 by Central Motors (Calderbank), Limited. The Seddon stand carries a DD8 double-drive eight-wheeler, an articulated tractor for 15 tons gross weight and an SD4 tractor and cab. Central Motors also shows an SD4 while Moodie and Company exhibits a Mark 15 and a seven-tonner.

Thornycroft Newcomer

Three Thornycroft vehicles are exhibited on Stand 115 by Transport Equipment (Thornycroft), Limited. Two of them are maximum-weight vehicles in their respective classes—a two-axle Mastiff and a four-axle Trusty—while the com-

(Continued on page 32)

FARES STRUCTURES

By Air, Rail and Road*

AIR

By J. L. GRUMBRIDGE, O.B.E., M.Inst.T.,
General Manager (Commercial) British
European Airways

It is a fair generalisation that domestic air transport in the United Kingdom is fortunate enough to have fare controls which are technically at the softer end of the range, whereas rail and road tend to the other extreme, as I understand it. But, again as a generalisation, when the carrier's wish is to raise fares, the air carrier's freedom is in practice not very much greater than that of rail or road.

The domestic network of British European Airways has no rates per mile, nor point to point fares, imposed on it by statute or local authority. Nor indeed have we, by law, any specific obligation to clear our fare proposals with the appropriate Ministry, which up to now has been the Ministry of Transport and Civil Aviation, and will in future be the newly formed Ministry of Aviation. However, this freedom has been voluntarily abjured. The Report from the Select Committee on Nationalised Industries, in the volume dealing with the Air Corporations, makes it clear that B.E.A. has accepted a situation in which it seeks the Minister's approval (and not merely his views) when wishing to change any of its domestic fares.

Control by external bodies does not finish with the Minister's powers as described above. Local advisory councils in Scotland, Northern Ireland, Wales and the Channel Islands, which are statutory bodies, have to be consulted before fares changes can be made. The Isle of Man Airports Board fulfills the same functions in its area. These bodies cannot negate a carrier's proposed changes. Their voices, however, are powerful and B.E.A., certainly, always does its best to carry these councils with it when wishing to make fares changes. The Minister's approval will be much more readily forthcoming if the appropriate advisory councils are not objecting.

Varying Systems

B.E.A. did not take over the domestic routes until February, 1947, and at that date inherited a system with an existing fares structure. Since that date, although many variations and changes have taken place, there has been no attempt to get a standard rate per mile and force all rates into conformity. Opportunity has been taken since 1947 to remove inherited anomalies. Nevertheless, as the fares are still basically designed to optimise the cost/revenue position on a route or group of routes basis, and as the characteristics of the different routes vary widely, there are substantial differences today in such matters as rates per mile and the types of fare available between different pairs of points.

The last sentence in the preceding paragraph is

*An abstract of papers presented to the Institute of Transport in London on November 8.

really the key to the whole domestic air fares structure. Any exceptions from it are exceptions. Whether a route is operated by B.E.A. or an independent airline, the ultimate objective is to make it operate without loss. Routes differ so widely in their characteristics that any common fares pattern, whether imposed from an outside source or from inside as a matter of tariff making convenience, would inhibit the flexibility that is essential, in my view, if the objective is to be attained.

Categories of Service

It is broadly true that the routes can be divided into three categories.

(a) Trunk routes—examples: London—Edinburgh, London—Glasgow, London—Belfast. Business traffic all the year round, particularly on week days, reinforced by some holiday travel concentrating in summer months and at weekends, and "personal" travel available all the year round.

(b) Holiday routes—examples: Mainland—Channel Islands, Mainland—Ile of Man. Predominantly holiday, with very heavy demand, strongly concentrated in peak summer months and at the weekends during the summer. Relatively very little winter traffic of any kind.

(c) Social routes—examples: Mainland—Western Isles of Scotland, Mainland—Orkneys. Sparse traffic demand throughout the year.

The basic fare, common to all routes, is a lower class single fare (tourist), with a return fare calculated at 180 per cent of the single fare (i.e. twice the single fare less 10 per cent.). This round trip discount is incidentally common to all international fares, and though on occasions the possibility of removing it in the case of the domestic fares has been examined, up to now the problems of doing this have weighed against the obvious advantages in simplification that would follow from having the return fare twice the single fare. Where higher class fares (first) exist the same principle in calculating return fares is followed.

There is no fixed differential between the tourist and first class fares, but the actual difference is in the region of 20 per cent or a little less.

Rates per Mile

In the case of the main trunk routes, although the normal tourist return fares are at the level of 4½d. to 5d. per mile, the 15-day excursions come out at around 3½d. The special eight-day fares at 2½d. to 3d. per mile, are incidentally amongst the lowest air fares in the world. Looking at Jersey first as an example of a holiday destination, the top fare, which practically reduces itself to a summer Saturday fare, comes out at over 9½d. per mile. The monthly fare comes down to less than 8d. and the 15-day ticket to under 6½d. These fares are from London. As distances get longer, an element of taper comes in, so that, for example, Glasgow—Jersey comparable fares are at under 6d., just over 5d. and under 4½d. The Isle of Man—Manchester fares, which are roughly comparable in distance with Jersey—London, are a little less than 9½d., under 7½d. and about 5½d. The slightly lower rate per mile of the Isle of Man fares is a general tendency, due to history, based

on similar differences in the surface fares applicable to the two islands.

As regards the social services, the normal fares vary considerably. But 8d. per mile is not uncommon. The 15-day fare, the true social fare, is in the region of 6½d. A colleague with whom I discussed this paper made what seems to me a very valid point, to the effect that it is the relative sparseness of the domestic air network, compared with rail or road, which makes possible a fares system more-or-less tailor-made to route requirements. A greater degree of route density and integration could well lead to more uniformity and "rationalisation" being imposed, necessarily, on the tariff, particularly so far as standard tourist fares are concerned.

Nevertheless, one cannot foresee the development of anything like as dense a network, with stops every few miles and cross-country connections, as is typical of rail and road. In the circumstances, therefore, specialised route characteristics are likely to continue, for as long as one can reasonably foresee, to call for tailor-made tariffs, without any route pattern being seriously affected by that of a dissimilar type of route.

In the early stages of this paper, I stated that the object of the fares structure was to optimise the cost/revenue situation and in fact lead to a situation where no group of routes was making losses. Anybody who is at all conversant with the situation will know that B.E.A. is making losses on its domestic routes as a whole. These are an integral part of the whole system. Men, machinery and overheads are in many cases shared with the international pattern, whilst traffic flows by connections to and from domestic services are an important contribution to the loads on international flights. The losses would not disappear, therefore, by merely lopping off the domestics.

Costly Operations

Against that background the Highlands and Islands social services are losing something like a third of a million pounds a year and we see no hope of real improvement, due to the overall sparseness of potential traffic. The holiday routes present us with a different, but still major, problem. The traffic is there, but however accurately we have worked out a fares structure to give us good loads throughout the year, the fact still remains that we may have something like a 20 to 1 variation between summer peak and winter trough. The necessary instruments for the provision of the immense peak summer capacity (aircraft, crews, ground staff, etc.) must earn their keep over a short season. Costs per unit must therefore be higher than on routes like the domestic trunk routes where the variation is a relatively low one. Making these holiday routes profitable therefore is an exceptionally difficult task, and this also means that really low fares at any time of the year are almost an impossibility. In the case of both the Channel Islands and the Isle of Man we were forced to seek increases in the fares in 1958.

None of this is true of the main trunk routes. Our promotional fares devices are proving themselves as means of getting winter load and generally ironing out, to a degree, the relatively small valleys that exist. As a consequence costs are more evenly spread throughout the year, and we firmly believe that in a relatively short time we will get these routes on a truly profitable basis.

As has been shown, the domestic air fares structure is in a constant state of development. The whole of that development is made up of a series

of steps designed, not merely to maximise traffic, but to marry traffic and capacity in such a way that the final result is an economically sound operation. The fact that there are still losses demonstrates that more has to be done in this way, and what has to be done will need to be set against a changing pattern of available capacity and cost structure due to new aircraft coming into service.

RAIL

By A. W. TAIT, M.Inst.T., Assistant General Manager, Eastern Region, B.R.

THE railway fares structure can be analysed in several ways, and the best for this purpose is by type of service. The three principal groups of services are:

First, the trunk services, catering for business and holiday travel on fast and semi-fast services operated between the main centres of population or between such centres and holiday resorts. The ruling fare used in this group is the ordinary second-class ticket. About three-fifths of railway revenue is derived from journeys on these services.

Secondly, the local provincial services, providing travel mostly at cheap day fares, on local stopping services outside London. A fifth of railway passenger business comes from this group. Thirdly, and covering the remaining fifth of railway revenue, are the commuter services, much of the travel on which is on season tickets and early-morning fares. The residential fares are used to some extent for travel on local services in the provinces, but most of the railways' business at these fares comes from daily travel to London.

For purposes of legal control and administrative convenience, railway fares are usually expressed, if not calculated, per mile. This can be a most misleading convention, particularly in comparing the fare per mile for different groups of service. The quality of the service, in terms of convenience, speeds, comfort and safety varies substantially as between one mile and another. The convention is no measure of value to the customer—or, indeed, of cost, to the operator.

Variations in Demand

The ruling fare on a service catering for a particular demand (or in some cases two demands, such as the regular travel to and from work between a coastal town and London and regular travel on the same service at summer weekends for day trips to the sea), should be high enough to make it worthwhile for the railway service to stay in business. Having fixed the ruling fare on this kind of calculation, the railway manager will then find that he has empty seats during off-peak periods. It will be in his own interest, as well as that of the passengers paying the ruling fare, if he can create a demand for these empty seats. To do so, since the demand is likely to be elastic, he will have to offer the inducement of a fare lower than the ruling fare. Special fares to fill empty seats will only be justified where the result is to increase the total receipts during the off-peak periods, and the administrative costs and physical problems of dealing with a differential fare structure are not too great.

Evolutionary Structure

The most interesting development in the formal structure of fares has taken place in recent years on the local provincial services outside London area. Most of the fares on those services have no longer any defined relation to the rest of the structure, but are determined by the level of the local bus fares. This development has taken place at the same time as the radical change in operating by conversion from steam traction to multiple-unit

(Continued on page 23)

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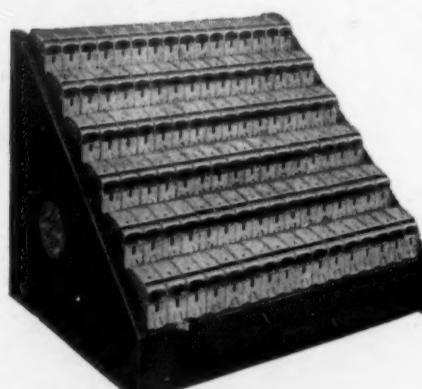
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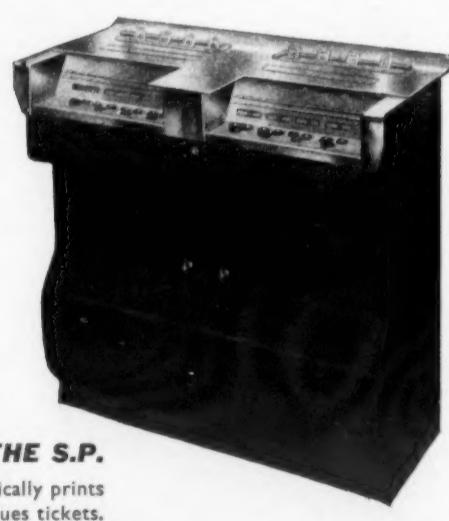
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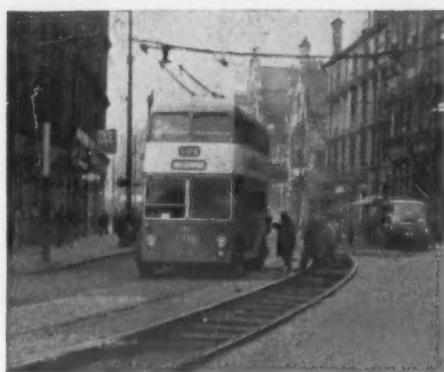
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SCOTTISH BUS OPERATING SCENES



Until last November, when trams were withdrawn, this track in Govan Road, Glasgow, was used by them and by railway wagons. It is now purely a railway and we illustrate a B.U.T. trolleybus of Glasgow Corporation passing road-resurfacing work on the wrong wires.



Of 45 A.E.C. Reliances delivered to Scottish Omnibuses, Limited, this year, 25 have 41-seat dual-purpose bodies by Park Royal. One of these is seen in Buchanan Street, Glasgow



An Austin 14-seater operating the Shieldaig—Strathcarron Station service of D. MacLennan is refuelled at Lochcarron



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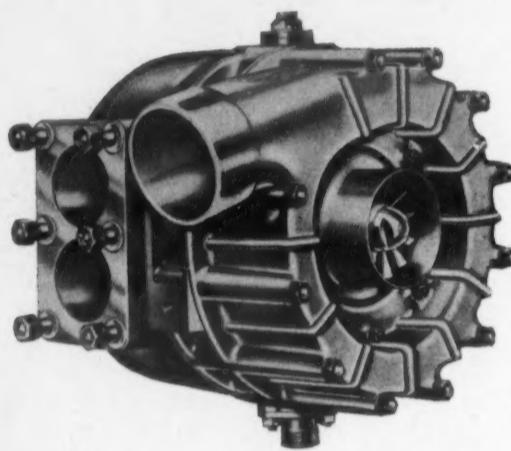
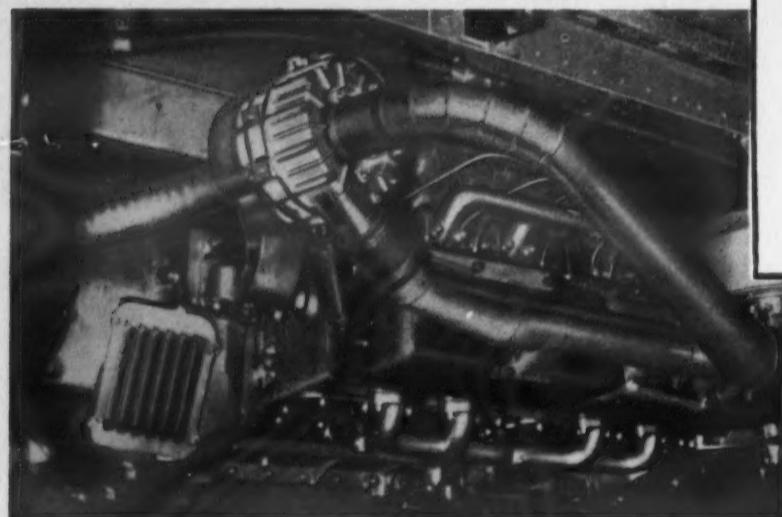
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ELECTRONIC RECORDERS To Help Electrification Work

A NEW electronic recording device is to be used by British Railways electrical and signal engineers to help in checking the performance and efficiency of new, high-voltage a.c. electrification schemes and equipment, and associated signalling installations. The device, known as an electronic analysing recorder, will provide information about an electrified system on a scale that could not be otherwise achieved and has never been possible before. This information will help engineers to improve the design of equipment for future electrification schemes and to predict requirements for lines to be converted from steam or diesel to electric traction.

Recorders will be installed in electric trains and locomotives and at points along test sections of electrified line, to record such data as the speed and position of trains relative to variations in electrical voltages and current consumption under varying load conditions, and the general effect throughout the power supply and in other related services. The Microcell Group has received orders



The electronic analysing recorder produced by the Microcell Group to British Railways specifications

for 27 recorders and all should be available by next spring. They will be used to provide information about two recently completed pilot electrification schemes, one between Slades Lane Junction and Wilmslow, on the Crewe—Manchester main line, and the other between Colchester and Clacton.

Large-Scale Operation

In a large-scale recording operation British Railways expect to use up to 24 recorders to take readings covering a variety of equipment over a wide area, but more recorders could be used if required. The recorders can be synchronised and operated remotely through a specially adapted master recorder, and coded time signals, issued by an electrical synchronous clock fitted to each recorder, will ensure that groups of readings can be accurately compared. Based on the computer principle, the recorders will code and store information on punched tape which will be processed later by standard computers. The computers will automatically print characteristic features in a tabulated form. The contract follows successful development work carried out by its Computer Division to the requirements of the Chief Engineer of British Railways Central Staff.

Forthcoming Events

Until November 21.—Scottish Motor Show. At Kelvin Hall, Glasgow.

November 16.—Permanent Way Institution. Paper by Mr. R. A. Green, "Signalling for Modernisation." At 222 Marylebone Road, N.W.1. 6.30 p.m.

Institute of Road Transport Engineers (Scottish). Paper by Mr. D. Kaberry, "Diesel Power Units." At North British Hotel, Edinburgh. 7.30 p.m.

November 17.—Industrial Transport Association. Paper by Mr. R. Morton Mitchell, "The Future of Road Haulage." At Royal Society of Arts, John Adam Street, W.C.2. 6.30 p.m.

Institute of Transport (Birmingham G. and S.). Paper by Mr. J. Pollard, "The French Railways." At Engineering Centre, Stephenson Place, Birmingham 2. 6.45 p.m.

Institute of Road Transport Engineers (North Eastern). Paper by Mr. P. Bullock, "The N Type Injection Pump and Hydraulics Governor." At Three Tuns Hotel, Durham City. 7.30 p.m.

Institute of Locomotive Engineers. Paper by Mr. F. E. Scholten, "The Swindon-built Diesel Hydraulic Locomotive." At Institution of Mechanical Engineers, 1, Birdcage Walk, S.W.1. 5.30 p.m.

Institute of Transport (Yorkshire G. and S.). Annual dinner. At Windmill Hotel, Blossom Street, York. 7.15 p.m.

Institute of Transport (Scottish). Paper by Mr. E. R. L. Fitzpayne, "The Future of Scottish Road Passenger Transport." At North British Hotel, Edinburgh. 6 p.m.

Institute of Transport (Humberside). Paper by Mr. J. B. Hawkes, "The Growth of the Air Ferry." At Chamber of Commerce and Shipping, Hull. 7.30 p.m.

November 18.—Institute of Road Transport Engineers (Western). Paper by Mr. J. F. Moon, "Transport Developments in U.S.A., 1957." At the Royal Hotel, Bristol. 6.30 p.m.

Peterborough Railway Discussion Group. Paper by Mr. F. G. Hole, "Hotels." At Peterborough Technical College. 6.45 p.m.

November 19.—Institute of Road Transport Engineers (Metropolitan). Paper by Mr. E. Kellett, "The Design of Radial-Flow Turbochargers and Their Application to Road Transport." At Royal Society of Arts, John Adam Street, W.C.2. 6.30 p.m.

B.R. (Western) London L. and D. Society. Debate with Oxford University Railway Society, "That the Desire for Speed in Modern Life Should be Discouraged." At H.Q. Staff Dining Club, Bishop's Bridge Road, W.2. 5.15 p.m.

Diesel Engineers and Users Association. Paper by Mr. J. E. Rohrman, "Piston Assemblies for Compression Ignition Engines." At Institute of Marine Engineers, 78 Mark Lane, E.C.3. 2.30 p.m.

Institute of Transport (Bournemouth—Poole). Paper by Mr. H. Harding, "Transport Accountancy." At Town Hall, Bournemouth. 6 p.m.

Institute of Transport (Northern Ireland). Paper by Mr. R. Flack, "Copenhagen, 1959." At 21 Linenhall Street, Belfast. 6 p.m.

Institute of Transport (South Eastern). Discussion. At County Hotel, Canterbury. 7.15 p.m.

November 20.—Institute of Transport (Swindon). Paper by Mr. W. A. Kendall, "The History of the Aeroplane." At Engineering Society Rooms, Swindon. 7.15 p.m.

Institute of Transport (Tees-side). Paper by Mr. H. D. Muirhead, "How Much Art in Advertising." At Cleveland Scientific and Technical Institution, Middlesbrough. 6.30 p.m.

November 21.—Railway Correspondence and Travel Society (South of England). Paper by Mr. R. H. Tomkins, "The Clangham of the L.N.W.R." At Palmer Hall, West Street, Reading. 6 p.m.

Light Railway Transport League. Paper by Mr. J. S. King, "The Tramways of Bradford." At Exchange and Engineering Centre, Birmingham. 2.30 p.m.

November 22.—Road Haulage Association (Central London). Annual banquet and ball. At Grosvenor House, W.I.

December 3.—Southern Counties Touring Society. Annual dinner. At St. Ermins Hotel, Caxton Street, S.W.1. 6 for 6.15 p.m.

Fares Structures

(Continued from page 20)

diesels. There is a flexibility in the fares charged on these services subject to a maximum equal to the road fares fixed by the traffic commissioners who license the road services. Modernisation has brought about a substantial reduction in costs, but the economics of particular services are being closely watched and where a service is not paying its way, it is liable to be withdrawn. The fares structure is not an arbitrary arithmetical scale, but is decided by demand, by road competition and by rail cost. All three are assessed on purely local circumstances.

The remaining two main fare groups have now two striking structural characteristics in common. First there is a taper with distance. The season ticket rates have always had this feature; they were introduced to stimulate residential travel far afield on the principle that one of the first objects of a transport operator is to minimise the handicap of distance. The level of fare and extent of the taper was varied to give the best commercial results on particular services. After the first war, these rates were made subject to statutory control and since then have acquired greater rigidity and uniformity. The device of taper has now been adopted for the operative scale of ordinary fares over 200 miles, although the maximum remains at a uniform rate per mile.

The second feature, in common in the fares structure in use on the trunk services and commuter services, is the provision of off-peak fares at lower levels than the ruling fare. Here the roles were reversed. Off-peak fares have been in operation on fast services for some time; for residential travel they are an innovation.

Future Development of Structure

Railways face a future in which most of the population will have their own transport, and when they turn to public transport will have a choice between rail, air and road. Railway services can only flourish in such a world by setting out to provide a quality of service for certain classes of demand superior in speed, convenience, comfort and safety to the alternatives at the public's disposal. The growing congestion on the roads, and possibly in time in the air as well, may help to underline the relative merits of railway travel in these respects. If railway passenger services are to survive, the managements must pursue a policy of selecting the quality of service required in those places where demand is sufficient in volume and regularity to justify a railway service. Modernisation has already brought about an improvement in the quality of local services, and as it extends, the main-line services will undergo as least as dramatic a change.

A formal and universal fares structure has already disappeared from the local provincial services outside London and the main agent in this change has been the need to come to terms with competition from the bus industry which adopts a local and flexible fares structure. It is almost certain that economic pressures in the shape of competition by air services for the longer journeys and the private car at all distances will bring about a similar development in the fares structure of the fast and semi-fast services.

Local Decisions

Many decisions have still to be taken to withdraw or modernise particular services and the level of fare should be considered an essential ingredient in these decisions. The effect on the structure of railway fares would be twofold. The general level of the ruling fare would vary as between one route and another, and the extent of special fares designed to fill empty seats will also differ as between one service and another. The description of the fares structure for "Air" already given in the first section of these papers points to the possible line of future development.

No change is entirely painless, and there are two difficulties to face in this likely development. The first is the sacrifice of simplicity. The present fares structure is easy to administer and well understood by the public. Its commercial virtue can be retained in part by ensuring that the separate structures of individual services remain simple and bear a fairly clear relationship one to another.

Administrative Difficulties

The second difficulty lies in the administrative complications of through booking. The simplest solution would seem to be to limit through bookings to the principal stations served by fast and semi-fast trains and to base through fares on a summation of local fares on the train services covered by the through journey. It is doubtful whether it matters greatly if the astute passenger is given the occasional opportunity of saving money by rebooking. For the passenger who wants to go on to destination on a local service, the option could be offered either of rebooking on changing trains, or paying at the time of booking a flat additional zone fare which would give him the right to use a particular local service to get him to his destination.

A radical change in the fares structure of the commuter services seems less likely. The larger the volume of traffic, the greater the need for a simple structure which must mean more averaging of demand. Commuter services have more of a monopoly character and operative fares may well continue to be subject to some measure of statutory control. The boundaries of the London area were very widely drawn, resulting in what is, perhaps, too great an area of averaging of fare levels. A revision of these boundaries might assist the full commercial development of some of the British Railways service into London, with benefit both to the user and to B.T.C. finances.

ROAD

By A. F. R. CARLING, M.A., M.Inst.T.
Executive, British Electric Traction Co.,
Limited

THERE are not less than 4,500 separate owners of public service vehicles in England, Scotland and Wales and a substantial proportion of them are also operators of licensed road passenger services. These vary very much in size, comprising anything from 2 to 2,000 vehicles, but even the largest of them is more localised than the smallest region of British Railways. Ownership and control are diverse, from the independent individual at one extreme to the groups of nationalised companies at the other (with many kinds of corporate and municipal bodies in between), and each undertaking is an independent sovereign power in the formulation of its fares tables. These

seem likely to continue to be formulated according to local judgment, partly because no centrally placed person would willingly plant himself in such a hornet's nest of angry detail, but mainly because of the great advantages of keeping charging policy local.

Variety of Fares Structures

I said earlier that all road operators were independent sovereign powers in the formulation of their fares tables, and that, of course, was in deference to the powers of the 11 bodies of area traffic commissioners who attach conditions regarding fares to the road service licences under which alone those services may be operated. I shall refer later to the use of these powers, and would only say here that although the commissioners have sought in recent years to encourage greater uniformity in the pattern and level of fares within each separate undertaking (usually by encouraging the adoption of fare scales) they have not generally attempted to standardise fares structures as between their different traffic areas, or as between separately controlled systems of services within the same traffic area, other than over lengths of route where services of more than one operator overlap.

I must deal with stage carriage services (those which offer fares less than 1s.), rather than express carriage services, because they account for the great bulk of road passenger revenue and mileage in this country. In 1957, of the revenue from licensed operation, 91.32 per cent came from stage carriage services, 4.95 per cent from express services, and 3.73 per cent from excursions and tours. It should not be imagined that because many stage carriage routes are long they are not concerned primarily with local traffic. Long routes cut down unproductive turnaround time, give useful additional facilities, and therefore revenue, but their main function is almost always a local one.

Case for Simplicity—and Taper

For all ordinary stage carriage services the fares structure has to pay close regard to two basic facts of bus operation—that passengers are able to board and alight at very frequent stops, and that fares are paid to, and tickets are issued by, the crew of the vehicle. In these circumstances, simplicity in the fares structures is essential. Nevertheless, the simplest possibility, a flat fare irrespective of distance, has never been viewed favourably in this country, even for short, local services. Similarly, a zonal system, with a flat fare for all journeys irrespective of distance within each zone, has never been adopted for longer services.

Any ordinary bus faretable in this country, therefore, consists primarily of ordinary single fares, available at all times, each route being closely sub-divided for the purpose into stages. It has long been the practice to make the rate of charge to taper with distance. The degree of taper has tended to become more pronounced in the course of the many fares revisions which have been necessary during the years of inflation.

One kind of route, that between city centres and estates where people have been rehoused from clearance areas, municipal transport sometimes fixes its fares with a very steep taper indeed, one which certainly cannot be justified by considerations of transport cost. This reflects a social, not a transport, policy. The short-distance city rider is made to pay more than he otherwise would in order to help compensate one of the economic effects of rehousing.

Return Fares

Along with the basic fare, the single, there are often others at a cheaper rate, though the need for high-speed ticket issue on the vehicle limits their variety. The most common is the ordinary return, available for return at any time. However, both the coverage with return fares, and the saving from a return compared with two single fares, have tended to be reduced compared with prewar days. In some areas, the return fare has even been eliminated altogether.

Workmen's returns, limited to issue in early hours, have largely been eliminated, and undertakings which still retain them are probably working gradually towards their elimination. They lack either social or economic justification in the conditions of today.

The other main component of the road fares structure is the season ticket in its various forms, with weekly, monthly, quarterly or termly periods of validity. These are more usual over interurban or suburban distances than over urban, but they have a number of advantages for the operator, and need not sacrifice much regular revenue if the rates are kept reasonably close to the appropriate multiple of the cost of five ordinary return journeys a week.

New Interpretation Needed

It would not require fresh legislation to introduce a measure of flexibility into the control of road fares. All that is necessary is a fresh approach by operators and by traffic commissioners, and a less narrow interpretation by the commissioners (and by the Minister of Transport in the event of an appeal) of the words "not unreasonable." The fresh approach should be that complete rigidity in the control of the fares structure ought to be limited to cases where it serves a definite purpose, such as avoidance of wasteful competition, and protection of the public against exploitation of the monopoly position of a road service licensee.

I can see no reason why all road operators, subject in competitive situations to prior agreement between those affected, should not be entitled by licence to reduce any of their scheduled fares for experimental periods. To continue a reduction beyond, say, one year a substantive application would be needed to bring the reduction within the scheduled fares. No general or widespread reduction would be likely to result from this suggested liberty of action, but much scope might be found for experimentation.

Likewise, the licensing of fares should allow limited flexibility in an upwards direction at the operator's discretion—"headroom," I believe, is the fashionable word—subject only to: (i) the traffic commissioners being satisfied by the operator that there is a prima facie case for the exercise of the discretion allowed by the licence, and (ii) the new fares being made the subject of an application to the traffic commissioners within, say, three months of their introduction so that local authorities may attempt, if they so desire, to disprove the case for the increase. In this way the debilitating effect of the timelag between the onset of higher costs and the compensation of higher revenue would be avoided.

Proved economy and performance

with the

PERKINS 1.6 litre

FOUR 99

Ratings up to 43 b.h.p. at 4,000 r.p.m.—the first
really high speed diesel!



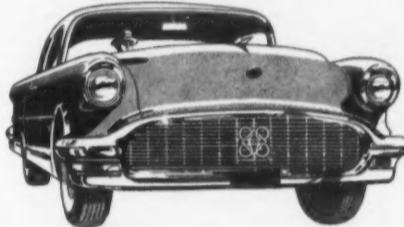
This is the "unshackled" diesel! The amazing FOUR 99 has speed, quick acceleration and smoothness. Plus the untiring power and proved efficiency for which Perkins diesels are famous.

This is what satisfied operators have to say about this amazing engine:

Mr. Norman Holt, Transport Manager, W. & C. French Ltd., Contractor for Civil Engineering Works.

"From the figure I have given you it is obvious that on an average annual mileage of 25,000 we shall save 625 gallons of fuel or over £125 per year, in addition, due to the longer life of a diesel engine, we shall expect to save the cost of a reconditioned engine during the vehicle's life."

As a result of our tests we are now fitting the FOUR 99 in all new 15 cwt vans.



...FOR CAR, VEHICLE, INDUSTRIAL,
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The Perkins FOUR 99 together with other high speed vehicle diesel engines of the Perkins range will be ON SHOW on the various stands of Manufacturers and Perkins Sign-holders at the Scottish Motor Show, Glasgow, November 13th-21st.



WHY WATER COSTS MORE THAN NEW SHELL ANTI-FREEZE

If your drivers drain their radiators every winter night, all you save is the few shillings that Shell Anti-Freeze costs. And a very false economy that is. For draining and refilling one vehicle takes a good ten minutes a day, or an hour a week, or some 22 hours a winter. And you're paying for that time.

Further, by letting air into radiators, you're simply encouraging rust. And water alone is never immune from the dangers of a freeze-up. On very cold days a truck can actually freeze on the move, let alone during a short halt.

But new Shell Anti-Freeze is absolutely safe in any British winter. What's more, Shell Anti-Freeze is also anti-corrosive. Above all, it saves you wasting the expensive time of your drivers on a cold and disagreeable job. **THINK OF THE WEATHER**

THINK OF YOUR FLEET THINK OF NEW SHELL ANTI-FREEZE

YOU CAN BE SURE OF SHELL



FILMS IN THE SERVICE OF INDUSTRY

Progress of the B.T.C. Unit

COMPARABLE in many ways with the printed word, the factual film has in recent years achieved widespread importance as a visual medium in the service of industry. Originally conceived and developed by the documentary movement in this country as "the creative treatment of actuality," the mainspring of its inspiration was to portray the themes and problems of everyday existence. Films such as John Grierson's *Drifters* (1929), which gave an authentic picture of the North Sea fishing industry, and *Night Mail* (1934), made respectively by the Empire Marketing Board and G.P.O. film units, were typical of a tradition which has persisted down to the present day.

At the same time the need for additional financial support and a wider projection of their ideas led the documentary film makers to invite industrial support, and the public relations needs of big concerns like Imperial Airways, the Orient Line, the Southern Railway, Shell-Mex, and the Shell Marketing and Refining Company which later established the Shell Film Unit, soon led to an appreciable extension of the documentary idea. Notable examples of this period were *Contact*, made with the co-operation of Imperial Airways; *Rising Tide*, sponsored by the Southern Railways, and *Shipyard*, sponsored by the Orient Line and Vickers-Armstrongs.

Early Film Units

The first privately sponsored and independent film company set up to promote documentary production was the Strand Film Company at the end of 1935. It produced some eighty films in four years including *The Future's in the Air* (1937) to publicise the Empire air routes and *Way to the Sea* which surveyed both road and rail transport between London and the coast. A second unit was formed in 1934 when a sponsoring industry, the Shell Marketing and Refining Company, formed the Shell Film Unit under the direction of Edgar Anstey, now in charge of the B.T.C. Film Unit. This was the first unit to be formed directly by an industry, and from the beginning it was aimed particularly in treating complicated scientific and mechanical subjects in a simple and readily understood manner. A third group, the Realist Film Unit, was formed in 1937 and specialised largely in making films for national bodies. Here again transport was a prominent subject, and *Road Across Britain* (1938) dealt specifically with traffic problems as they were thought to exist at that time!

Altogether in the period 1929-39 some 300 films were made by the documentary film industry on a wide variety of social and scientific themes. In the main distribution was non-theatrical and free, the sponsors assessing their returns in terms of prestige rather than receipts. This made the producers independent of the normal commercial channels, and enabled them to maintain a high standard of integrity and a tradition that is still carefully perpetuated. It should also be added that these pioneer production units provided the training

ground for many of the second generation of documentary film directors who are active today, some of them as feature film directors.

Wartime Stimulus

Ironically, it was the 1939-45 war that gave this essentially peaceful and constructive industry its greatest impetus. Under the aegis of the Ministry of Information, which began its work in September, 1939, the film division incorporating the G.P.O. unit and later renamed the Crown Film Unit, made or sponsored a total of 725 films during the period of hostilities. The bulk of this production was to inform public opinion on matters of national importance and to promote interest in everything that would help achieve victory. The subjects covered ranged from plastic surgery to outdoor tomato growing, and varied from 5-min. shorts to feature-length successes such as *Target for Tonight*. Thus almost overnight the hitherto insufficiently appreciated documentary film achieved a new importance. Its potentialities were understood and exploited on the broadest scale, facilities for non-theatrical showing reached every community in the country, and by the time the war had ended there was never a doubt that the movement could continue to play an increasingly important part in the academic, social and industrial affairs of the nation.

The Film in Transport

The opportunity to form a film unit wholly concerned with the needs of transport came with the establishment of the British Transport Commission in 1947. The Commission's film department (later to be known as British Transport Films) was actually established in 1949 in the department of the chief public relations and publicity officer, and was the result of prior investigations into the use of films by industry, and by the separate elements of the Commission during the 20 years that preceded nationalisation. The attempt to gain by past experience was also reflected in the choice of staff, many of whom had worked with the British documentary units in pre-war years. This policy assured the continuity of the high artistic standards that inspired the early documentary producers, and is well attested by the regular inclusion of British Transport films as part of the British entry for the Venice Film Festival.

Types of Film

Films made by the commission can be classified in three categories. The informational film is intended to give the public an idea of the Commission's activities, and to present the current problems that confront nationalised transport. It may deal with road passenger and freight transport, railways, inland waterways, docks, hotels, catering, or London Transport, and includes films like *Ocean Terminal*, a semi-documentary story dealing with Southampton Docks; *Care of St. Christopher's*, an account of life in the Derby Home for Railwaymen's Children; *Broad Waterways*, a report on new

developments on Britain's inland waterways; *The Travel Game*, featuring the Harwich-Hook of Holland route to the Continent; and *Under Night Streets*, a documentary drama of night maintenance on London's Underground. Aspects of the British Railways modernisation plan are bulking increasingly large in such films as *A Future on Rail* and *Groundwork For Progress*.

A second type of film for public showing is intended to promote traffic by publicising specific road and rail services. This is presented in the

inevitably arise when executive decisions require some further explanation. In this sphere of industrial relations the film has immense possibilities, although no one with any knowledge of such delicate matters will suppose this to mean that it can offer a cut-and-dried solution to this thorniest of problems.

Distribution

Distribution is both theatrical and non-theatrical. The former is carried out in the normal

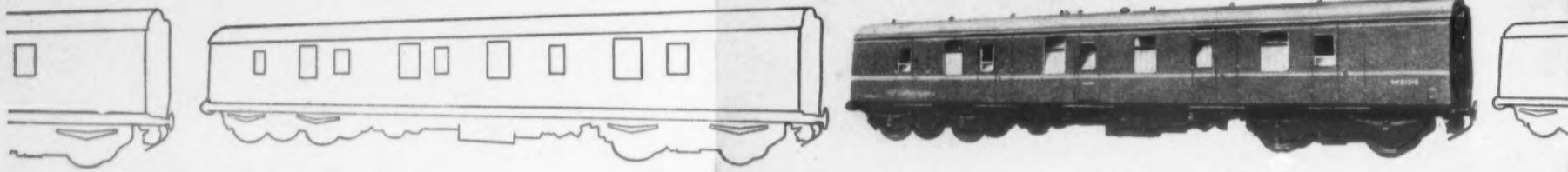


This effective still from the B.T.C. film "Link Span" typifies the work of the unit and was used on the cover of "The History of Wagons-Lits, 1875-1955," which was published recently by "Modern Transport."

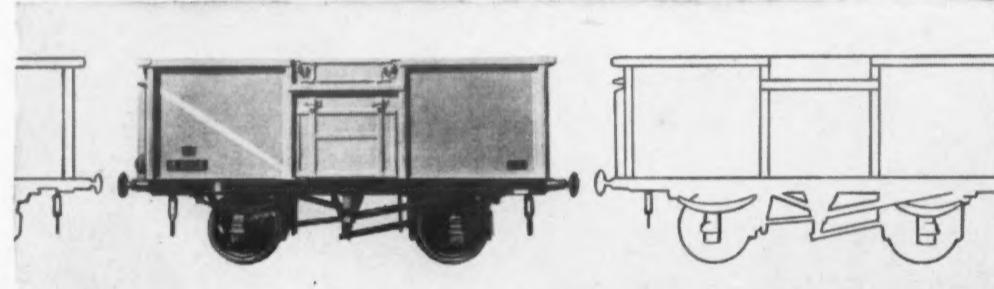
form of a travelogue and may deal with recommended holiday areas, country houses open to the public, museums and other local attractions. The third category of Commission films is for staff instruction. The majority of them deals with the teaching of trades and maintenance and is used in conjunction with set training courses. It is now also recognised that the staff film can be used in a more imaginative way to bring about a better understanding between departments, to improve morale and clear up misunderstandings that in-

way through a commercial distributor; the films are sold on their entertainment merits. Non-theatrical distribution is done by circularising approved projector owners and by means of mobile 16-mm. projectors owned by the Commission. There are also several cinema coaches which circulate throughout the railway system to facilitate staff-training schemes. These coaches seat an audience of 58 and are equipped with 16-mm. sound projectors fed by a mobile generator carried

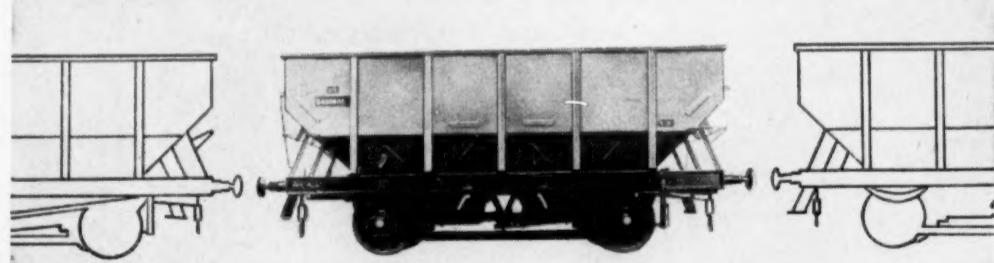
(Continued on page 30)



The 58-foot Gangwayed Standard Brakevan, supplied by Pressed Steel to British Railways.



16-ton all steel Mineral Wagon. 72,000 of these have already been delivered from our Paisley works.



21-ton Hopper-type Wagon with drop bottom door for minerals, as used by British Railways.



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A train 300 miles long

In the last eight years, Pressed Steel have produced enough railway rolling stock to make a train over 300 miles long. Rolling stock of all types, for all gauges, at home and overseas. You see some of these wagons and carriages opposite.

Clearly, Pressed Steel have enormous productivity. Their record shows it. But what the figures do not show is the store of experience built up by our designers and engineers over the last 300 miles of rolling stock. At Pressed Steel we use this experience to make sure that each wagon we produce is a sound engineering job, that it is produced as economically as possible, and in an absolute minimum of time. And we use this experience in intensive research, which will enable us to play our part in developing new and better carriages and wagons in the future.

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Manufacturers also of motor car bodies,
Prestcold refrigeration equipment and
pressings of all kinds.

SERIES FOUR B.M.C. RANGE

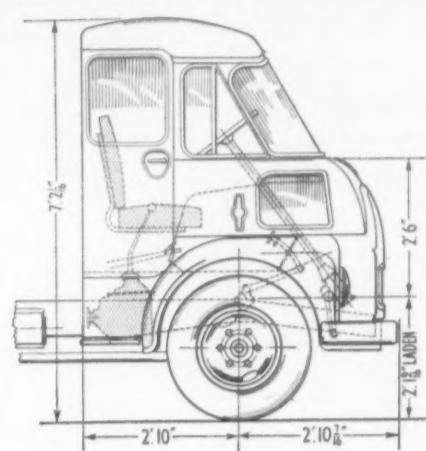
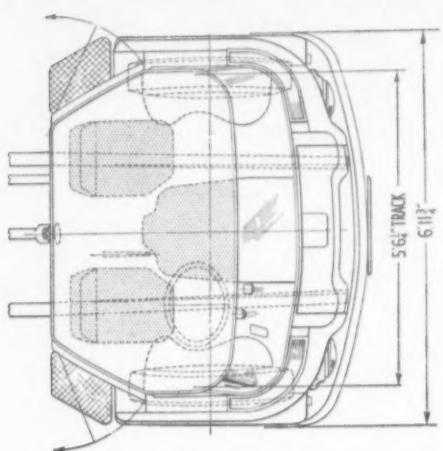
Austin and Morris 2 to 4 Ton Chassis

SERIES 4 commercial vehicle chassis introduced this week by the British Motor Corporation, Limited, in the 2- to 4-ton range, bearing the brands of both Austin Motor Company and Morris Commercial Cars, feature a cleverly conceived new cab, the major feature of which is that its doors are angled across the rear quarters. Although the new cab, designated FG, is bound to attract the most interest, the Series 4 chassis have also been extensively developed, with lower loading height, larger brakes and strengthened chassis and rear axles among the improvements.

The new range has been developed to meet the

handle lifts upwards; there are no winder handles projecting and the exterior door handle is recessed to lay flush with the body. There are thus no projections to catch and tear clothes. Dual self-parking windscreen wipers, mirrors and the usual standard equipment are installed, while provision is made for fitting radio and heater.

The introduction of 16-in. dia. wheels on the 2- and 3-ton chassis has resulted in a low-loading height, now only 37½ in. and 38½ in. off the ground respectively. The 4-ton chassis has 20-in. wheels and tyres. All three vehicles are available with either a petrol or a diesel engine, and in chassis-



Coachbuilder's drawing giving basic dimensions of the new B.M.C. FG cab

growing trend on the part of retailers to employ medium-capacity goods vehicles on local delivery work in place of the lighter types of van. Suitability for stop-start work as well as longer-distance operation has been a major design consideration. Particular attention has been paid to the standardisation of parts for easy and economical servicing. Design of the cab has been directed towards a general improvement in driven comfort and convenience and reduction of the hazards in manoeuvring and in entering and leaving the cab in congested or restricted conditions.

One of the greatest advantages of the new cab is its ease of access, contrived by fitting the doors at an angle to the rear of the wheel arches across the rear quarters. This leaves room for a large

cab or chassis-front end condition. The 2-tonner has a wheelbase of 9 ft. 6 in. and the 3- and 4-tonners are each of 12 ft. 1 in. wheelbase.

All versions can be purchased with a dropside or a platform body fitted and all are available with right- or left-hand steering. Any of these variations can be supplied knocked down for export.

B.M.C. petrol or diesel engine alternatives available throughout the range are the six-cylinder 4-litre petrol engine or the four-cylinder 3.5-litre direct-injection diesel engine. The petrol engine is an overhead valve unit of 87.3-mm. bore and 111.1-mm. stroke with a compression ratio of 6.4 to 1, which develops 90 b.h.p. at 3,000 r.p.m. The diesel engine has a bore of 95 mm. and a stroke of 120 mm. and develops 68 b.h.p. at 2,600 r.p.m.



Two views of the new B.M.C. Series IV goods vehicles, in this case an Austin four-tonner. Morris versions are similar except for the grille design

step, covered with rubber to prevent slipping. It also aids reversing, for with the cab doors open the driver has a wide field of vision. A further advantage of this type of door is that it makes garaging easier. If there is enough room to get the vehicle in, there is enough room to get out, for the doors protrude only very slightly outside the line of the body. As an aid to manoeuvring in tight corners, front corner windows are included. These are low enough to give the driver a near view of the kerb, an obvious advantage when driving in areas where small children may be playing. The corner windows can be replaced by steel panels as an optional extra.

A large one-piece wrap-round windscreen and narrow side pillars make for exceptional visibility.

Both are well-proven units in various other B.M.C. vehicles.

Transmission is through a Borg and Beck single dryplate clutch of 11-in. dia. and the B.M.C. four-speed constant-mesh gearbox having large-diameter gears and ratios of 6.061, 3.473, 1.746 and 1 to 1 forward and 6.051 to 1 reverse. A balanced open tubular propeller shaft has needle-roller-bearing universal joints and a large centre bearing rubber-mounted on trunnions. Rear axle ratios are 4.585 to 1 on the 2-ton and 3-ton chassis with 5.714 to 1 optional on the three-tonner. The four-tonner has a standard ratio of 5.86 to 1 with an option of 6.67 to 1, while for petrol-engined four-tonners a 4.71 to 1 axle may be specified.

The 2-ton chassis has unassisted Girling

hydraulic brakes, of two-leading-shoe type at the front and leading-trailing-shoe type at the rear.

Dimensions are 12 in. by 2½ in. all round, giving a total lining area of about 202 sq. in. Both the 3- and 4-ton chassis have vacuum servo-hydraulic Lockheed two-leading-shoe equipment all round, but of different sizes to provide a total lining area on the three-tonner of 230 sq. in. and on the four-tonner of 275 sq. in. The handbrake on all three is mechanically linked to the rear wheels.

Steering is by Cam Gears Type H (worm and cam) on the smallest chassis and the high-efficiency Type HQL on the other two.

Steel disc wheels with six-stud fitting are common throughout. The two-tonner has 6.50-16

8-ply tubeless tyres, while the three-tonner has 7.50-16 8-ply for home use and the same size in 10-ply for export. Standard equipment on the 4-ton chassis is 7.00-20 10-ply tyres.

Exterior and interior details of the new cab, features of which are exceptional visibility, improved driver comfort and safety in entering and leaving through rear-quarter doors, which protrude little beyond the sides of the body when fully open

Triangular quarter lights are also fitted, with a rear portion which opens for ventilation. In each door, a balanced drop window is installed, while a large rectangular light is fitted at the back of the cab. The doors are fully sealed against draughts and dust. The driver's seat is of a tubular construction, with a foam-rubber cushion and a backrest of rubberised hair. It is adjustable fore and aft as well as up and down.

The entire front panel is detachable, permitting easy access to the engine for servicing. The instrument panel is neatly laid out and positioned directly in front of the driver. The lighting controls—apart from the main beam control on the steering column—are on the right-hand side, almost under the driver's hand. This arrangement is possible because the fascia panel runs the whole width of the windscreen from door to door. The inside waist rail forms the door pull and the door



FOR TRUCKS OF
5-6 TON
PAY-LOAD

Lockheed 16-inch brakes are
expressly designed for this
range of truck, with 16" x 2½"
two-leading shoe front brakes
and 16" x 3½" or 4½" wide
rear brakes.

Lockheed

ONE OF THE
AUTOMOTIVE
PRODUCTS
GROUP

For lighter trucks, the Lockheed 12" or 14"
x 2½" two-leading shoe front brakes in
conjunction with 14" x 2½" rear brake with
transverse wheel cylinder are available.

All the above-mentioned brakes can be used
with Lockheed vacuum boosters.

May we make recommendations?

LOCKHEED HYDRAULIC BRAKE COMPANY LTD
LEAMINGTON SPA • WARWICKSHIRE



Architect: H. A. F. Spooner, L.R.I.B.A.

DEMANDS
THE
STREAMLINED
LOOK

Exceptionally light, modern and pleasing in appearance, aluminium combined with ESAVIAN craftsmanship produced these sliding doors for the Maidstone & District Bus Company.

ESAVIAN designs for the modern age, for maximum efficiency. Aluminium doors by ESAVIAN are light to operate, low on upkeep costs (never rust, never need paint), look good, mean a clear approach into the depot. And there are no bumps—track is flush with floor.

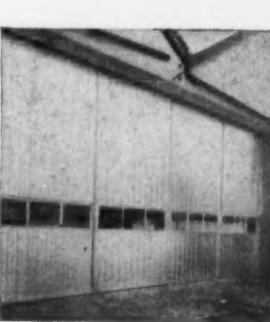
ESAVIAN design and make these doors—ESAVIAN also fit them. Next time you need to fit doors to a big opening, call in ESAVIAN—they will give you expert service from the first consultation to the final installation.

Write for details of the

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folding and sliding principle
for doors, windows,
partitions and screens

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Albion Reiver Test

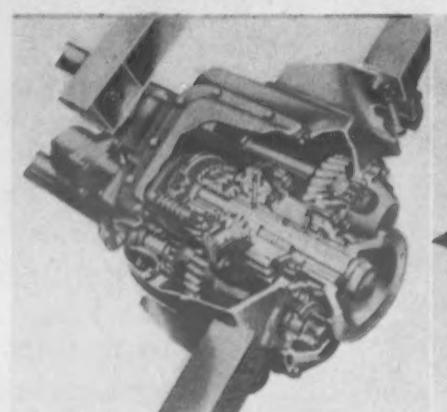
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One output shaft is coupled directly to the leading axle, which has its differential offset to permit the other shaft to pass through the leading axle body by means of a relay shaft, and thence to the final axle bevel gear. The shafts throughout are Hardy Spicer open tubular units with needle roller bearing universal joints. The two driving axles are Albion double-reduction units already used with outstanding success in the Chieftain and other Albion and Leyland chassis. Primary reduction is by spiral bevel gear with a secondary reduction through epicyclic hub gears. Standard overall ratio for the Reiver is 6.933 to 1.

Good Payload

Despite the double drive and relay gearbox, the tare weight of the Reiver is not excessive, the 15-ft. wheelbase chassis and cab provided for our test having a licensing weight of 4 tons 11 cwt. This would give a ready-for-the-road tare, complete with full fuel tank, all equipment and a 21 ft. 6 in. light-alloy platform body (say 8-10 cwt.) of about 5½ tons, leaving a margin of 10½ tons for payload within the recommended maximum running weight of 15½ tons. In fact, with a load of test weights and extra equipment, the test chassis turned the scale at 15 tons 16½ cwt. and the whole of the test was run at this weight with a crew of two in addition. The front axle was carrying 4 tons 18 cwt. of the total.

As on first acquaintance with the current Albion cab, which was fully described in the road test report on the Chieftain in our issue dated July 5, 1958, we fully approved the well-planned appointments for the comfort and convenience of the crew, with the possible exception of the driver's seat adjustment. This, although it provides a number of combinations of height, reach and rake of the backrest and is as comfortable as could be wished for once adjusted, requires two hands and a fair amount of effort in finding the right position. In other respects the cab offers everything necessary for crew well-being, including that most elusive facility in forward-control designs—ease of access.



Reiver transmission units include a relay gearbox and double-reduction rear axles: here are seen a perspective view of the relay box, the large pinion of the spiral-bevel gears and (right) the 4-to-1 ratio epicyclic hub gears

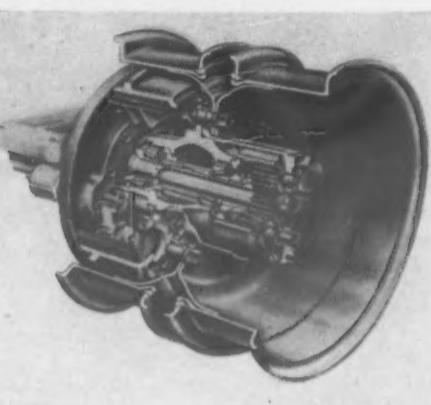
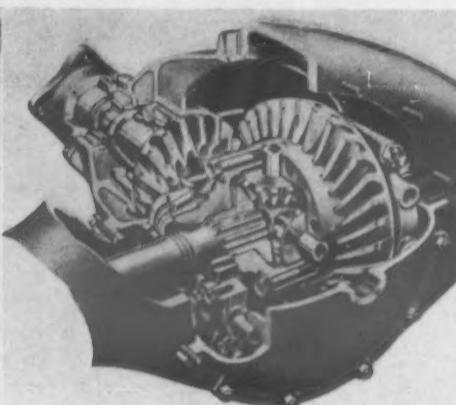
of 58 ft.. Also contributing to a general air of lightness of control were a reasonably low mechanical noise level, conveniently placed pedals and levers and the easy facility with which gearchanges could be made in the excellent six-speed Albion gearbox.

The gearbox in fact sets the seal on the Reiver, giving it that edge of performance, particularly in getting the loaded vehicle moving and keeping it

moving at good speed over undulating roads, over "compromise" vehicles—basically 7-tonners with added third axle or articulated types—carrying similar payloads. High reliability and durability in operation at its rated weight of 15½ tons are assured by the traditional Albion standards of quality of materials and workmanship and the well-proven merits of Leyland diesel engines.

The O375 diesel, which was developed from the long-established O350 for the 14-ton gross Leyland Super Comet and to provide more power when wanted in the lightweight Tiger Cub passenger chassis, has good reserves of power in those applications and is well able to deal with the additional

a theoretical gradient ability of 1 in 5.2 to a maximum speed in overdrive of 46 m.p.h. As is usually the case, in practice performance worked out rather better than this. We made an easy restart in first gear on a gradient of 1 in 5 and second gear starts were just as comfortable on slopes of 1 in 8. Pull in the other gears read from the Tapley meter were 150 lb./ton in third, 85 lb./ton in fourth and 40 lb./ton in fifth. Overdrive proved a useful gear even fully loaded on undulating roads and could be gainfully used at speeds above about 25 m.p.h. Recorded top speed on level road was 36 m.p.h. in direct drive and 48 m.p.h. in overdrive, while on slight downgrades



gross weight of the Reiver. Output is limited to 105 b.h.p. at 2,200 r.p.m. in the Albion application and with only about 6 b.h.p. per ton gross available, the contribution made by well-matched gear ratios and easy gearchanging in obtaining the acceleration figures published in the table is obvious.

With the optional overdrive sixth speed, the combination provides fully laden performance from

in suitable conditions recorded speeds of 52-53 m.p.h. were reached on several occasions.

The brakes fitted to all wheels of the Reiver provide a total lining area of 840 sq. in., sufficient with the air-pressure assistance to lock the four bogie wheels in heavy applications, in which conditions there appeared to be some occasional wheel hop at the back end. But the vehicle stopped always in a straight line and in a series of simulated emergency stops from 30 m.p.h. on dry tarmac the average measured distance taken to come to rest from the first pressure on the pedal was 69 ft., with a best recorded distance of 67 ft. Away from our standard route, there was not the opportunity of carrying out the usual fade test, but with its generous provision of 55 sq. in. per ton of recommended gross weight and the standard fitment of fade-resistant moulded linings, this should not be a problem with the Reiver. We noted that after heating up the brakes through a long application on a downgrade, brake-meter readings were substantially the same as with cold brakes, when they ranged from 52 to 56 per cent on the Don meter and from 55 to 70 per cent on the Tapley meter.

Fuel Economy

Fuel consumption was checked over a route we have used before in the Glasgow area and one used commonly by Albion Motors, Limited, covering 10 miles out and 10 miles back on A811 between Buchlyvie and Stirling. This is a fairly narrow



SEWING MACHINES GET THROUGH THE BLIZZARD!

10 a.m. Two Singer Sewing Machine representatives, one Thames Van—stuck fast in the snow in the wilds of Northumberland!

It took six hours to get that van out of the drift; six hours of frantic digging against a bitter blizzard; six hours with snow swirling in front of the windows, covering the wheels, rising steadily higher and higher! Six hours and then—one pull of the starter, and the engine started ticking over perfectly, as if nothing had happened.

4.30 p.m. Two Singer Sewing Machine representatives, one Thames Van—safely back in Mexborough, with no trouble at all!

There you have convincing proof of the utter dependability of the Thames Van—the tough, wiry dependability that stands up fair and square to all weathers, all conditions. There's unflagging strength here, the strength that carries the heaviest loads without faltering, the in-built strength that gets you off and away fast. There's amazing capacity too, wonderful time-saving manoeuvrability, years of lusty life and that's not all. In a Thames Van you have an all-time high in driver comfort, an all-time low in running costs. Prove it for yourself. Discover just how much work a Thames Van can do for you. Your Ford Dealer will be delighted to give you a demonstration. See him—soon.

What size van suits you?
Thames are built at 5 cwt., 7 cwt.,
10/12 cwt. and 15 cwt.
Whatever you want a van to do—
a Thames will do it better.
BEST SELLING VANS IN BRITAIN

road, undulating over about half the distance and fairly flat for the remainder. With a slight overall downhill bias on the eastward run, the Reiver averaged 13.3 m.p.g. at an average speed of 32 m.p.h.—a notable performance at the test weight representing 212 gross ton/m.p.g. and 136.3 payload ton/m.p.g. On the return run there was one hold-up of a few seconds' duration and that and the wider use of lower gears on the gradients brought the 20-mile round-trip result to 11.3 m.p.g. at an average speed of 29 m.p.h.

This gives a fair indication of what should be achieved in fully loaded truck service in not-very-open conditions. Operations involving some empty running will obviously result in higher averages. As well as the continuous-running fuel test we also checked the total fuel used during the whole of the day's work. This amounted to 74 miles, 10 miles of it in fairly heavy Glasgow traffic and well over half of it over hilly A81 skirting the Campsie Fells. This mileage also included great deal of full-power low-gear work and many stops in acceleration, hill-climbing and braking tests, representing far more arduous conditions than are likely to be met with by the Reiver in normal service, except perhaps as a tipper on enclosed site work. An indication of what might be expected of a vehicle in this type of service was given in the overall figures, which worked out at exactly 9 m.p.g.

The Reiver appears destined to give a good account of itself in various fields from trunk haulage to heavy-duty construction site and other off-road work. In the latter application it has the great advantage of the first-rate traction afforded by two driving axles and the ability to lock the air-operated inter-axle differential at will by means of a control valve on the steering column.

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TRANMERE OIL TERMINAL

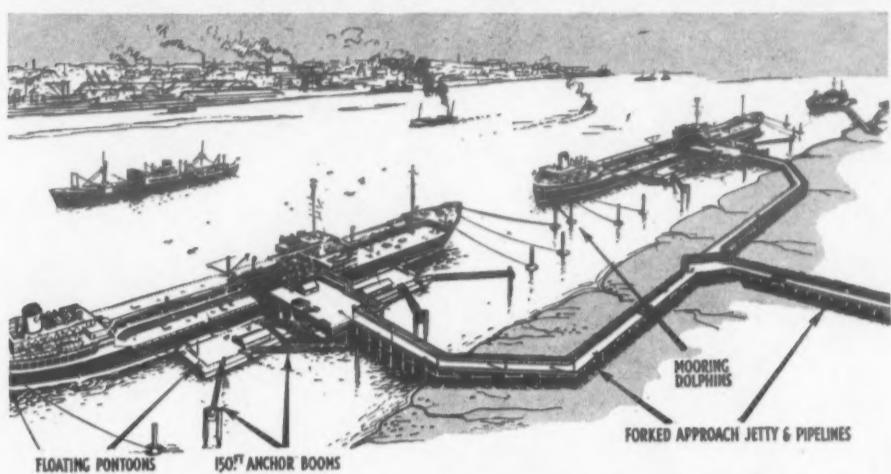
Facilities for Berthing Supertankers

In recent years the rapid growth in the size of oil tankers has posed many problems for oil companies and port authorities. Even as recently as 1954 when the Mersey Docks and Harbour Board opened the Queen Elizabeth II Dock at Eastham for tankers supplying the Shell refinery at Stanlow, berthing facilities for 30,000-ton ships was regarded as adequate. Today, with supertankers of 65,000 tons and upwards on the slipways these existing facilities have had to be supplemented by entirely new installations located farther downstream at Tranmere, on the Cheshire

stand 375 tons of static horizontal force—which is the calculated pressure caused by a gale blowing on the beam of a large tanker in ballast. The jetty is designed to absorb 700 tons of kinetic energy at either end of each stage, and is in fact a cushion for its own protection and for the tankers that use it.

Advantages

The design of the Tranmere project is believed to be the first of its kind in the world, and it may lead to great improvements and economies in the



Artist's impression showing two 65,000-ton supertankers moored to the floating stages

side of the River Mersey, about nine miles north-west of the Stanlow refinery.

This new project, which is already well advanced, has been developed jointly by the Mersey Docks and Harbour Board and Shell Refining Co., Limited. From the outset it presented several unusual engineering problems, mainly because the site is located at a tidal part of the river where a 30-ft. tidal range plus a 30-ft. pumping differential gives a 60-ft. vertical movement between the ship and a fixed quay.

Dolphin Moorings

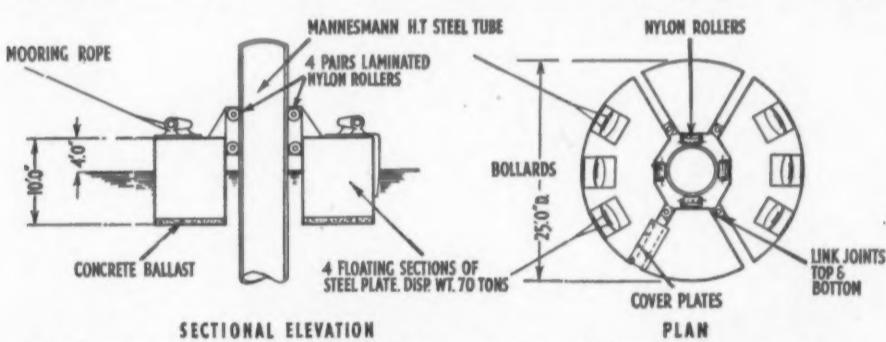
To overcome the tidal problem the original scheme envisaged a single floating stage some 2,000 ft. in length. It was then realised that if instead of mooring the ship to the floating stage they could be moored to dolphins (fixed mooring posts), then the single long stage could be broken down into two short lengths and so greatly reduce the cost.

On the face of it this would appear to be a very simple expedient, but, in fact, the design of a dolphin which could meet the necessary requirements was no mean achievement, and the result incorporated some new and ingenious features which are clearly shown in our illustration. Apart from having a mooring platform which is free to rise and fall with the tide, they have been designed to withstand a 150-ton horizontal pull applied at high water. The 5 ft. 8 in. diameter guide piles are of high-tensile steel, the heaviest weighing approximately 100 tons and has a length of 120 ft. They have been sunk and concreted into 6-ft. diameter holes bored 30 ft. deep into the sandstone rock of the river bed, and are located in four groups of three to provide moorings for two of the largest vessels. As a result of introducing these

building of future jetties. Apart from the reduction in size that is possible, they may now be regarded as floating berthing booms and could lie to a row of piles or cylinders. In the event of damage a floating beam could be removed and replaced by another. The system is obviously of great value in tidal waters, where the cushioning effect of the floating booms, the self-adjustment of the dolphin moorings, and the minimum variation in levels, all offer important advantages over existing practice.

The forked approach jetty is mainly of reinforced concrete, precast wherever possible. It provides a vehicular roadway, footpath and pipetrace, to the two jetty heads, which will be large enough to provide flow-boom equipment for ship-to-shore pipe connection, fire pump and vehicular turnaround. Stagemaster's offices, etc., will be located at the fork in the jetty. The jetty head platform projects over the stage and is cantilevered forward with the face of the platform 17 ft. 6 in. back from the berthing face to allow for the backward movement of the stage under wind load and berthing impact. The flow boom equipment will allow for a vertical movement of the ship of 70 ft. The berths are being dredged to give a depth of 40 ft. at low spring tides, involving the removal of a large quantity of rock in addition to softer material.

To connect the Tranmere site with the existing facilities at Eastham there will be a 24-in. pipeline located partly in the foreshore, partly in tunnel, and partly on land. The oil stage will remain the property of the Mersey Docks and Harbour Board and the oil pipelines will be owned by Shell. The simultaneous discharge of two supertankers of 65,000 d.w. tons will be possible, enabling about 150,000 tons of oil to be pumped ashore daily.



Plan and elevation of the new mooring dolphin which rotates freely on its axis and has unlimited vertical movement up and down the guide pipe

dolphins it has been possible to reduce the length from 2,000 ft. of floating stage to two lengths of 366 ft. each at an estimated saving of £1 million.

Floating Stages

Each stage comprises a deck structure 366 ft. long by 62 ft. wide consisting of deep longitudinal girders supported by individually removable transverse rectangular steel pontoons, and has a displacement of 2,000 tons. For fixing the position of these stages a simple and ingenious device has been employed. It consists of eight 150-ft. steel booms (four per stage) anchored through trunnion and pivot connections to heavily loaded ballast boxes suspended by links from Mannesmann steel tubes as used for the guide piles of the dolphins.

During the berthing of a ship the anchor booms swing backwards and upwards, and because of the 100-ton ballast suspended at the rear of each boom, the more the ship pushes the more resistance she meets until equilibrium is achieved. The whole stage anchorage system has been designed to with-

necessary the Tranmere installation will be capable of supplying the Stanlow refinery with eight million tons of crude oil per annum. At present this refinery employs more than 5,000 people, and the transport of crude oil from the Middle East to keep it in full production calls for the continuous operation of some 60 ocean-going tankers. The main contractor for the approach jetty and stages is Peter Lind and Co., Limited, with the Cleveland Bridge and Engineering Co., Limited, as sub-contractor for the steelwork.

The office of the Engineers Guild has been removed to 201 High Holborn, London, W.C.1. The appointments division has been accommodated at the new address also.

Associated Electrical Industries, Limited, London, and Alco Products Incorporated, New York, announce that an arrangement has been made for joint collaboration in design, manufacture and sale of diesel-electric locomotives for world markets.

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WINDOWS ON THE WORLD

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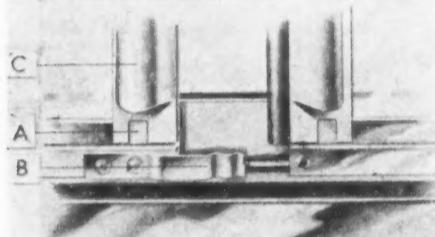


IN Sweden, we were told during a recent visit to Clayton Works, Wishaw, home of Young Windows, Limited, the name Young is synonymous with vehicle windows. Only modesty, we feel sure, prevented our informant from adding that this is equally true in a number of other countries, for the Young constant-balance window patents are the subject of licence agreements with vehicle-window manufacturers in France, Germany and Spain, while no less than 80 per cent of the not-inconsiderable output of Clayton Works is exported directly to countries throughout the world.

But it is in Sweden perhaps that British-made Young windows are used most widely in Europe and also where the company's greatest recent success was achieved in winning a contract in the face of worldwide competition to supply many thousands of double-glazed balanced drop windows for new passenger coaches ordered by Swedish State Railways. These windows represent the acme of the window maker's art. Each comprises inner and outer frames of chromium-plated extruded brass, with Permalite densified-wood laminates between for insulation purposes, supporting a sealed double glass Tyneside window. The frame is designed for perimeter glazing directly into the coach paneling. A weighty window, it serves to demonstrate the versatility of the patented Young constant-balance regulator, which provides window positioning as light and positive in these as in the much lighter types in common use. The Swedish railway-coach unit also embodies a specially developed balance adjustment that is immediately accessible, so providing for quick adjustment to compensate for the slight variation in weights of individual windows.

Early Success

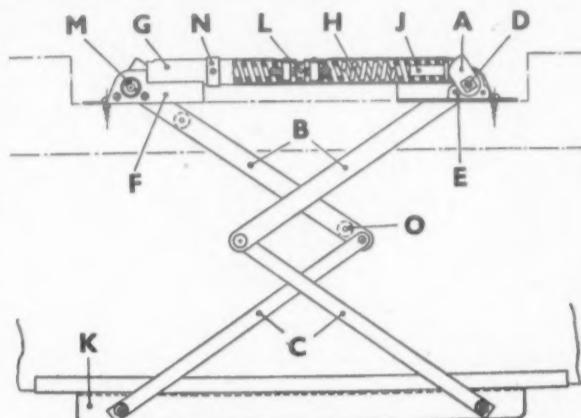
Young Windows, Limited, now manufactures a full range of windows and regulator gear for road, rail and marine use, including fixed, full-drop, half-drop and top-sliding units, but the company's resounding early success was the result of the soundness of the regulator gear designed by the founder of the company, the late William Young.



Detail of the V type double-top-sliding window: A is a finger grip keyed to the bottom slide channel, B is the double spring clip designed to keep the window either closed or 1 in. open; in the latter position the windshield vanes C act as air extractors

who patented his designs in all the principal countries and started up in manufacture of the gear in Wishaw in 1924. Production of the first complete windows for buses and goods-vehicle cabs was started a few years later and whereas these early A-type units were unbalanced, design improvements led to the introduction of the B-type constant-balance regulator in 1930.

The B-type gear was greatly in advance of contemporary design; it provided for the first time simplicity and robustness, reliability, ease of fitting



Detail of the Young B type regulator: A cams, B and C arms, D swivel pins squared into cams and brazed to arms B, E brass bearing blocks, F brackets screwed to E, G tubes brazed to F, H springs, J collet pins bearing on cams, K bottom channel stiffener, L spring pressure adjuster, M bearing sleeve nuts, N spring ring and O silencer pads

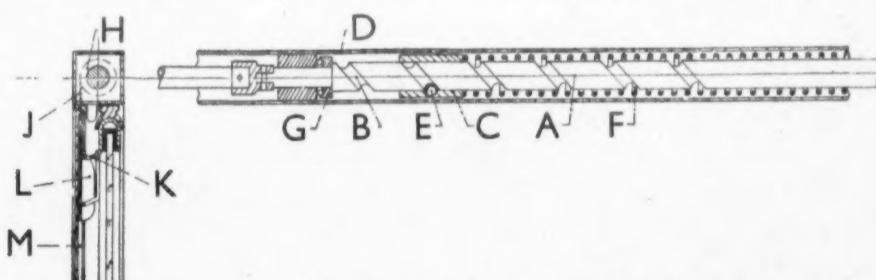
supporting arms, which will support 4-12 lb. The basic Young patents concerned the use of a spring-loaded cam gear to support the weight of the window in whatever position it is placed, without the need for locking devices to preserve the position against the effects of road shocks and vibration. The B-type gear is illustrated at the top of the page. Simple adjustment of the spring is provided to carry windows of varying weight within a specified range and the cam profile is designed to give constant balance throughout the window movement; it also provides slightly increased pressure in the fully closed position, so that the window will remain closed even if the balance adjustment is badly set.

Half-Drop Regulator

In the F3 type half-drop regulator the balance is arranged in a tube at the top of the window and is bracketed to the side members for screwing into the body opening. The balance consists of a case-hardened spindle having a varying-pitch spiral groove over which is fitted a sliding sleeve, which is also a sliding fit in the carrying tube. A hardened steel ball is fitted into the sliding sleeve and is arranged to run freely in the spiral groove of the spindle; when this is turned the sleeve moves along the spindle and acts against the spring. The window is suspended on special bands of stainless steel arranged to coil and uncoil on drums attached to each end of the spindle as the window is raised or lowered.

As the window is opened the reaction of the spring would obviously increase with a constant pitch of the spiral groove, tending to force the window back into the closed position. This is prevented by providing a groove pitch that decreases with distance from the closed position, so that the reducing pitch and increased thrust angle compensate for the increased spring pressure and maintain a constant balance over the full range of window movement. Casings protect the side fittings and the balance gear is housed in a dust-proof tube pre-filled with grease.

The Young V-type horizontal sliding window,



Detail of the Young regulator for the F3 type half-drop window which fits into the top of the window frame: A spiral-grooved spindle, B groove with varying pitch, C sliding sleeve, D top balance tube, E hardened steel ball, F tension spring, G ball thrust washer, H window suspension drum, I stainless-steel suspension bands, K grip, L window-supporting slides and M protective casing

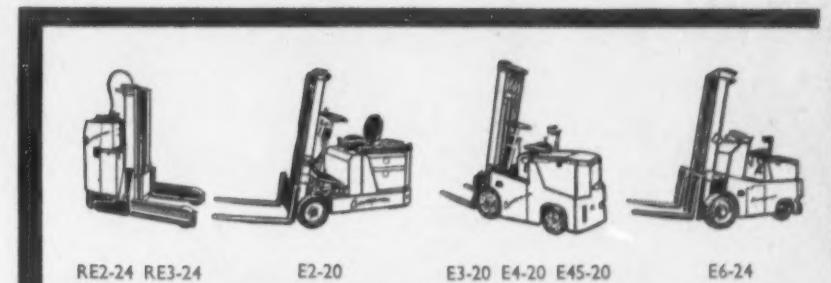
and positive setting in any position between open and closed, immune to the effects of vibration. Deservedly, the Young window was successful and the B type has gone on increasing in popularity up to the present day, when many hundreds of thousands are in service all over the world. It is currently made in two sizes, B1 having a carrying capacity of glass and frame from 12 to 25 lb. and B2 having a capacity from 25 to 35 lb. The full depth of drop in both cases is 21 in. and it can be supplied as a complete unit with balance adjusted or as a fitting only.

Company Prospects

Although William Young died in 1953, he lived to see his company prosper. His first factory—a wooden shed—was replaced by a substantial brick building in 1935, which itself was extended in 1939, though the work was interrupted by the war, and again in 1943. Young Windows became a limited liability company in 1948 and currently operates a 50,000-sq. ft. factory with roundly 100 employees engaged solely in the production of vehicle windows and window regulator gear.

The B-type window was soon followed into production by the D-type gear, suitable for lighter

although it does not require balancing gear, also has a number of features to commend it. It can be supplied with a single sliding section with a windshield that acts as an extractor when the window is slightly open or with two sliding panels opening from the centre, in which case a special channel section also acts as an extractor when opened slightly. Both types are available for inside or outside fitting or for perimeter glazing. Originally all windows were framed in steel or brass sections, brass extrusions replacing rolled section largely during the last war, these being painted or chromium-plated to requirements. Two big changes have come about in recent years, the first relating to the glass itself, which is now almost all toughened safety glass, and the other in frame materials. From a production of some 95 per cent brass framing up to seven years or so ago, there has been a complete swing to the use of about 95 per cent aluminium-alloy extrusions, finished by polishing, anodising or painting. When the time comes for the next change, which might be to stainless steel if or when this material becomes readily available in extruded sections, we can expect to find Young Windows, Limited, setting the pace.

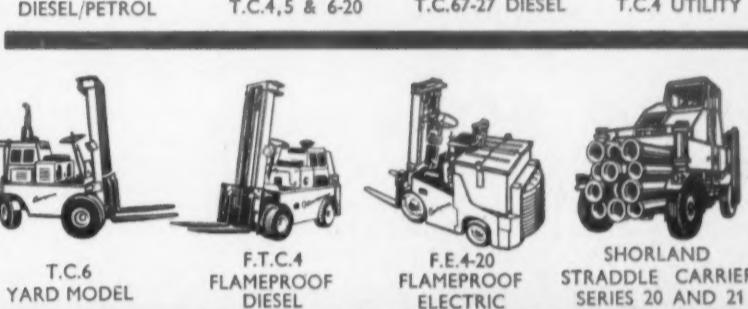
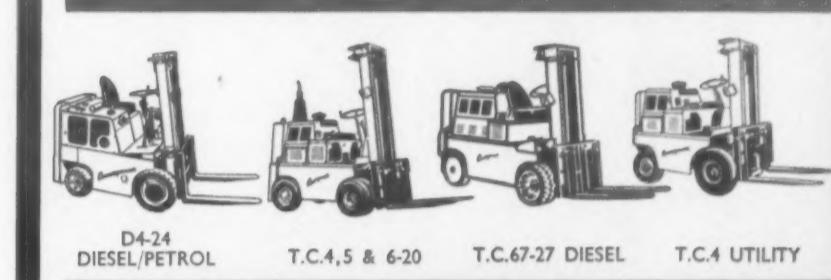


RE2-24 RE3-24 E2-20 E3-20 E4-20 E45-20 E6-24

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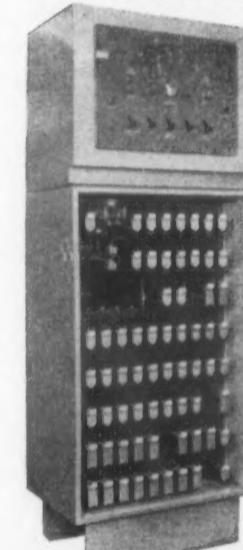
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INDICATION given in 2 seconds When a field device changes position, it notifies the field application unit which automatically starts the stepper unit transmitting the appropriate code back to the control office, where an indication light on the control panel diagram shows the new position of the field device. Indication is completed in about two seconds.

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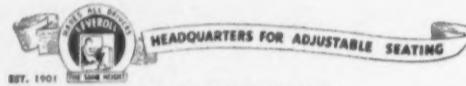


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PROSPECTS FOR RAILWAYS

Parliamentary Secretary on Flexibility

THE prospect facing the railway industry was the theme of a speech made by Mr. John Hay, M.P., Joint Parliamentary Secretary to the Ministry of Transport, when responding to the toast "Our Guests" at the annual luncheon at the May Fair Hotel on November 10 of the Retired Railway Officers' Society; the toast was given in humorous vein by the president, Mr. A. W. Norman, who remarked that the Society consisted mainly of pre-war officers who were trying to live on pre-war pensions. Mr. Hay said he could speak with some feeling about railways as his great-grandfather had been a signalman in Fifeshire and his brother, at the age of 26, was today a traffic apprentice. The Minister, who regretted his inability to attend, had asked him to convey good wishes and to say he hoped he would be invited to their next gathering. Mr. Marples was indeed a dynamic character; ideas flowed from him and he was one with whom it was a great experience to work. He (the speaker) could say that whatever happened in transport in the next two or three years life would not be dull. The Ministry had recently undergone a surgical operation which enabled them to concentrate on inland transport and to try to decide what was best for the country and industry generally.

Need for Flexibility

What, he asked, was the prospect facing the railway industry? Truly, it was going through a very great change. It had served the country very well in the past; unfortunately it had suffered in two world wars—devastating damage in the second—but the world did not stand still and we must change with changing times and take measures to meet competition—motor and air transport and possibly the hovercraft. The railways must be flexible and be prepared to meet changes in demand.

The inherent conservatism of the British people made them averse to change but, continued the Parliamentary Secretary, "we cannot put up with the outworn or outmoded." Hence the modernisation plan. The Ministry had been considering the Commission's reappraisal since the document was presented last July; they were looking at it very carefully indeed. The study must necessarily be in the light of the need in this country for the greatest flexibility in transport by rail, road, sea and air. It was no use deciding in the light of 1959—"we must look ahead to the last part of this century." It was a great challenge and a great opportunity and they would give every help towards meeting the challenge and towards seizing the opportunity.

Confidence in the Future

Sir John Benstead, deputy chairman of the B.T.C., in proposing "The Society," in the absence through indisposition of Mr. A. B. B. Valentine, conveyed greetings from Sir Brian Robertson. Sir John, in referring to the great bond of friendship which ran through the industry, said he had been associated with railways for nearly 50 years and the fact that he was the only surviving original

member of the Commission made him feel all the more keenly the loss through death of his old friends Sir William Wood and Sir Ronald Matthews. He was profoundly confident of the future of the railway industry; its very essentiality was the secret of its success and the proliferation of the car underlined the need for an up-to-date railway system.

The present managements were facing a tremendous task and one which was not appreciated in all quarters; they were trying to do the work of half a century in about a fifth or a tenth of the time. Mr. David Blea was achieving in the London Midland Region the greatest railway transformation this century had seen, and he deserved every possible success. Railway officers were a dedicated class and that really summed it up. The idea that railways were a dying industry must be destroyed, and he appealed to railway officers, past and present, to encourage their own kith and kin to enter railway employment, for it was no use modernising the railways without modern young men to operate them.

Responding, Major-General G. S. Szlumper said the Society was born in 1901 and enjoyed its first outing in 1904. Today it was 200 strong. "There is a saying," he remarked, "that those whom the gods love die young; most of us are nearly 80 and you can draw your own conclusions." They all hoped to see a rebirth of the *esprit de corps* which was the foundation of the efficiency of the old railways. As to the Parliamentary Secretary's remarks, might he respectfully suggest that if the Minister had any ideas he would, before adopting them, consult the leaders of the industry? Mr. W. E. Blakey proposed the health of the president, who, in replying, paid tribute to the work of Mr. J. W. Kerr, the hon. secretary, and Mr. J. H. Laundy, hon. treasurer of the Society.

— ★ — FILMS IN INDUSTRY

(Continued from page 24)

in a separate coach. Travel films for overseas are usually distributed with the help of the Foreign Office, the British Travel and Holidays Association and other official agencies.

Twice a year the section carries out an analysis of all film distribution, and current figures show that an audience of 450,000 is being reached each month in British cinemas. About double this number of people see the films non-theatrically each month during the autumn and winter. Some 896 copies of staff-training films are also currently in use, and altogether 1,000 copies are dispatched by the section each week.

Of the films so far produced, the majority have been for and about British Railways. Even so, care has been taken to maintain a reasonable balance, and apart from four films on inland waterways and some half a dozen on shipping there have been more than a score on road transport, and many more on safety, welfare and staff relations.

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SOCIAL AND PERSONAL

Conservative Transport Committee

MR. GEOFFREY WILSON has regained the chairmanship of the Conservative Parliamentary transport committee, with Mr. Nigel Fisher as vice-chairman and Wing Commander R. Grant-Ferris and Mr. R. Gresham Cooke as hon. secretaries. It is stated that Mr. Wilson, who was chairman until Mr. J. W. Peyton defeated him in the last session, this time tied with Mr. Peyton on the first count and was elected by 36 to 34 on the second vote.

* * *
Mr. H. J. H. Nethersole, A.M.I.Mech.E., M.I.E.E., as announced last week, has been appointed general manager of traction at the English Electric Co., Limited, to take effect on the retirement of Mr. C. M. Cock at the end of the year. Mr. Nethersole was born in Johannesburg and educated at schools there and in Grahamsburg. He gained two degrees, B.Sc. (pure science) and B.Sc. (mechanical and electrical engineering).



Mr. H. J. H. Nethersole

at the university of Witwatersrand. After post-graduate training with Metropolitan Vickers, he spent six years with Merz and McLellan and nine years with Trinidad Leasenhols, Limited, where he became chief engineer. Joining the English Electric company in England in 1945, he was transferred the following year to its subsidiary in South Africa, the English Electric Co. of South Africa (Pty.), Limited, becoming managing director at the end of 1947. This post he will relinquish. He is also a director of the English Electric Co. (Central Africa) (Pvt.), Limited, and of Marconi (South Africa), Limited. Mr. Nethersole numbers among his professional qualifications membership of the Institution of Electrical Engineers, the American Institute of Electrical Engineers and the South African Institute of Electrical Engineers, associate membership of the Institution of Mechanical Engineers, and fellowships of the Institute of Petroleum, the Institute of Directors and the Royal Society of Arts. He has played a leading part in public life in South Africa, being member of the executive councils of the Federated Chamber of Industries of South Africa and of the Transvaal Chamber of Industries, and a member of the councils of the Institute of Electrical Engineers and of the Institute of International Affairs of South Africa.

* * *
Mr. Frank Perkins (founder and chairman of F. Perkins, Limited) has been elected chairman and Mr. J. C. Proudfoot appointed managing director of Ambrose Shardlow and Co., Limited, Sheffield.

* * *
Mr. J. P. Hippisley, formerly assistant road motor engineer, Kings Cross, has been appointed plant and road vehicle engineer, Eastern Region, B.R. Mr. N. Newsome, A.M.I.Loco.E., formerly divisional outdoor carriage and wagon engineer (Southern), Stratford, becomes rolling stock engineer.

* * *
Mr. J. Hancock, B.Com., M.Inst.T., hitherto commercial superintendent in the office of the line traffic manager, Great Northern, Kings Cross, and now appointed commercial officer (traffic headquarters), Liverpool Street, Eastern Region, B.R., was educated at Archbishop Holgate's Grammar School, York, and joined the L.N.E.R. in the divisional stores superintendent's office, Gateshead, in 1924. After a year's tour of Canada and the U.S.A. with a Sir Ernest Cassel travelling scholarship in 1931, he was appointed a traffic apprentice. During the 1939-45 war he was commissioned in the Royal Engineers (Movement Control), served in France and the Middle East as Deputy Assistant Director of Transportation with the rank of major, and was mentioned in dispatches. On his return to railway service, Mr. Hancock became successively head of the traffic section, goods manager's office, Glasgow; goods agent, Stockton; head of the passenger rates and fares section, York, and assistant to commercial manager (passenger), York. In 1956 Mr. Hancock was appointed assistant to commercial manager (passenger), Eastern Region, and in November, 1957, commercial superintendent on the Great Northern Line.

* * *
In the biography of Mr. Harold Wilmot, which appeared in our last issue, it was not made clear that he relinquished the presidency of the Locomotive and Allied Manufacturers Association after two years in office. He was succeeded by the present president, Sir George H. Nelson.

* * *
Mr. J. O. Eaton has been appointed staff and organisation assistant to the chief civil engineer, London Midland Region, B.R. He joined the Great Western Railway in the divisional engineer's department in 1921. Formerly head of the works clerical section at Paddington, he was, upon the formation of a departmental organisation and methods section in 1956, charged with the responsibility for introducing work study and improved administrative methods. He was extensively trained in organisation and methods work and took up duty as head of the office methods section, his last appointment prior to present promotion.

Mr. Maynard A. Metcalf, C.B.E., vice-president of traffic, Canadian National Railways, has announced that he will retire in January next.

* * *
Mr. P. Armstrong, hitherto assistant regional establishment and staff officer, has been appointed regional establishment and staff officer, Eastern Region, B.R.

* * *
Mr. Duncan Sandys, the Minister of Aviation, has appointed Mr. Richard Hornby, M.P., to be his Parliamentary Private Secretary in succession to Mr. Geoffrey Rippon, who has become Parliamentary Secretary to the Ministry.

* * *
The retirement is announced of Mr. J. Janes from the head office staff of the Thornicroft organisation. He is well known for his activities with the Traders Road Transport Association, of which he was made an honorary member last July.

* * *
The Minister of Transport has appointed Mr. J. D. R. T. Tilney, T.D., M.P., as his Parliamentary Private Secretary, and Mr. J. Garlick as his Principal Private Secretary. Lord Chesham, Joint Parliamentary Secretary, has appointed Mr. L. A. Prior to be his Private Secretary.

* * *
Mr. G. W. Irwin retires at the end of this year as secretary of the Eastern area of the Road Haulage Association. His successor is Mr. K. Williams, formerly on the East Midland area staff. Mr. Irwin, formerly a haulage contractor at Linton, Cambs, had held the post at Cambridge for 21 years.

* * *
The annual dinner of the East Midlands section of the Institute of Transport took place, for the first time at Leicester, at the Grand Hotel. Previously the function had been held at Nottingham. The president, Mr. Reginald G. Grout, responded to the toast, "The Institute of Transport" proposed by Alderman S. Brown, Deputy Lord Mayor of Leicester. The chairman of the East Midlands section, Mr. G. J. Aston, who presided, proposed the toast "The Ladies," and the response was made on their behalf by Mr. G. Warrington, chairman of the Sheffield section. The dinner was followed by dancing until midnight.

* * *
As briefly reported in our columns last week, Mr. D. J. A. (Jack) Davies has joined Marshall Motor Bodies, Limited, of Cambridge, as bus sales manager for the Marshall-Mulliner products. This arises out of the agreement reached whereby Marshall Motor Bodies will expand the production of Mulliner p.s.v. bodies. Mr. Davies was until recently with John C. Beadle (Coach-builders), Limited, as sales manager and before that managing director of Weymanns, Limited, and a director of Metropolitan-Cammell - Weymann, Limited. He joined Weymanns in 1931 from Park Royal Coachworks, Limited, as it was then known. He is a former member of the council of the Society of Motor Manufacturers and Traders.



Mr. D. J. A. Davies

* * *
Mr. L. F. Chamberlain has succeeded the late Mr. W. E. Chamberlain in the chairmanship of the Chamberlain group of companies.

* * *
We record with regret the death, at the age of 86, of Mr. J. Mallagh, former chief engineer to the Dublin Port and Docks Board. He retired in 1942.

* * *
Mr. J. Mackie, rolling stock superintendent, Aberdeen Corporation Transport Department, has retired and joined Small and Parkes, Limited, at its Aberdeen depot.

* * *
We regret to record the death of Mr. W. F. Minnis, who was general manager of the Belfast and County Down Railway from 1926 to 1944. He had also been chairman of the general manager's conference of the Irish railways. Mr. Minnis was 87.

* * *
Mr. Christopher T. Brunner, a director of Shell-Mex and B.P., Limited, will be the guest of honour at a dinner of the Transportation Club on November 26; he will speak on "Oil supplies for the railways." This will be the last function to be held at 44 Wilton Crescent, S.W.1. The club is seeking other premises.

* * *
The Railway Club is staging a special exhibition of some of its historical material at the former London Transport bus garage at Clapham, which has been taken over by the British Transport Commission as a future transport museum under the curator of historical relics. The exhibition, which has been arranged as part of the diamond jubilee celebrations of the club, revealed many interesting railway documents, crests, pictures and models. It closes at 6 p.m. on Sunday, November 15.

* * *
Mr. S. B. Warder, chief electrical engineer, British Transport Commission, is to visit Bombay, Calcutta and New Delhi in December, at the invitation of the Indian Government Railways, to give lectures on British Railways' electrification programme. The Indian Railways are following British Railways' example by introducing the 25,000-volts 50-cycles a.c. system of electrification on over 1,400 miles of their routes, and, in his lectures, Mr. Warder will tell Indian railway officials how Britain can help them not only with technical advice but by supplying electrical equipment. While in New Delhi he will attend a meeting of the Permanent Commission of the Railway Congress Association.

* * *
Mr. J. W. Grieve, B.Sc., M.I.E.E., formerly assistant electrical engineer (new works), chief mechanical and electrical engineer's department, Eastern and North Eastern Regions, has been appointed electrical engineer (new works), Eastern Region, B.R. Mr. Grieve was educated at Bradford Grammar School, Edinburgh University, and Heriot Watt College, Edinburgh. After pupillage with Metropolitan Vickers and traction equipment installation experience, he joined the L.M.S.R. in 1930. In 1951 he was made electrification engineer in the electrical engineering new works and development section of the British Transport Commission for electrification schemes in the Eastern and North Eastern Regions. His last appointment dates from 1956.

"Bantam"

2-3 and 4-5
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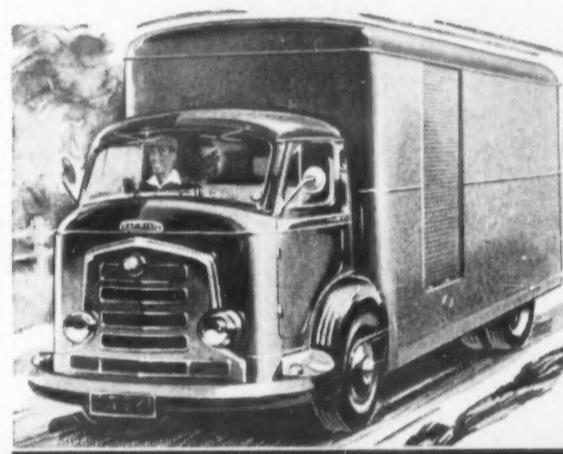
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IMPORTANT CONTRACTS

More Diesel Train Sets for B.R.

ORIDERS have been placed with British Railways workshops at Derby, Eastleigh and Swindon for another 390 diesel train vehicles by the British Transport Commission for passenger services in London, Liverpool, Manchester, Leicester, Nottingham, Hull, North Wales and Scotland. The orders are worth nearly £6 million and all the vehicles should be in service within the next two years. Of 282 vehicles to be built at Derby, 104 will form 26 four-car sets—six for services between Liverpool and Manchester and 20 (additional to 15 previously ordered) for suburban services from Marylebone Station, London. The Scottish Region will have 78 of the other vehicles to be built at Derby, and these will form 26 three-car trains which will be allocated to Scottish routes on delivery. The remaining 100 vehicles will be built as 50 two-car units, 21 for services between Nottingham and Leicester and other stations in that area on the former Great Central Line, 18 for services in or around Manchester and 11 sets will be used on lines in North Wales.

Inter-city diesel trains are to be introduced between Hull and Liverpool, serving other important points en route, and the Swindon workshops are to build 51 vehicles for these services. Each train will be of six vehicles and will include a buffet car. The 57 vehicles to be built at Eastleigh Works will form 19 three-car diesel-electric train sets, to which reference was made on page 1 of our issue dated September 19.

Railway Improvements at Folkestone

John Laing and Son, Limited, has been awarded a contract valued at about £550,000 by the Southern Region of British Railways for track widening from Cheriton Junction to Folkestone Central and the reconstruction of Folkestone Central Station. Estimated date of completion is May, 1961.

St. Lawrence Seaway Bridge

The St. Lawrence Seaway Authority has announced the award of a contract for construction of the superstructure and deck of Cornwall North Channel Bridge to the Canadian Bridge Division of Dominion Steel and Coal Corporation, Limited, Windsor, Ontario. The contract, which is valued at \$3,174,948, was the lowest of four bids. The bridge will provide a pedestrian and highway crossing of the North Channel of the St. Lawrence River between Cornwall and Cornwall Island, and of the Cornwall Canal; it is to be completed in the summer of 1961.

Pneuride Suspension for Leicester Ambulances

Four B.M.C. 30-cwt. LD2 chassis equipped with Dunlop Pneuride air suspension have been supplied to the City of Leicester Ambulance Authority by the Dunlop Rubber Co., Limited. This is the first time that any ambulance in Britain has been supplied with this type of vehicle and the order was placed after Leicester ambulance drivers had carried out a series of exhaustive tests on a prototype vehicle. In this application the Pneuride suspension, which consists of two convoluted bellows air

springs made of nylon-reinforced rubber and charged by a belt-driven compressor, is fitted to the rear of the vehicle only.

True Motion Radar Orders

The Orient Line has ordered from Decca Radar, Limited, a most comprehensive True Motion radar installation for the new passenger liner *Oriana*, which was launched last week by Princess Alexandra. The Orient Line was amongst the very first to place an order for True Motion radar when this British development was originally introduced by Decca in October, 1956. The total number of ships for which orders for Decca True Motion radar have been placed has now reached 9,000.

Philippines Order Another Viscount

Vickers-Armstrongs (Aircraft), Limited, announces the sale of a Vickers Viscount V745 series turboprop air liner to Philippine Air Lines. This aircraft will bring the P.A.L. Viscount fleet up to three and the total Viscount sales up to 408. P.A.L. ordered its first two Viscounts (V784s) in April, 1956, and has operated very successful turboprop services for over two years. The value to date of all Viscounts and spares sold is nearly £160 million, of which nearly £130 million has been in overseas markets.

TENDERS INVITED

THE following items are extracted from the Board of Trade Special Register Service of Information. Inquiries should be addressed, quoting reference number where given, to the Export Services Branch, Board of Trade, Leaden House, Theobalds Road, London, W.C.1.

November 19—Belgium.—Ministry of National Defence for 35-seat petrol-engined buses with spare parts and maintenance and spares books. Tenders to the Ministère de la Défense Nationale, Administration Générale du Budget, Direction Générale des Approvisionnements, Direction Supérieure des Achats de Matériel, Service d'Achat du Matériel Automobile, Quartier Prince Baudouin, Place Dailly, Brussels. (ESB/26108/59.)

November 20—Chile.—Santiago Municipality for about 70 MUNICIPAL VEHICLES of various types. Photocopies of tender documents (in Spanish) from Export Services Branch, B.O.T., price 19s. (ESB/23648/59.)

November 24—Republic of Honduras.—Honduras National Railway for two DIESEL RAILBUSES to carry 75 to 85 seated and 25 to 35 standing on journeys of about 60 miles. Tenders to the Office of the National Railway of Honduras, San Pedro Sul. (ESB/26160/59.)

November 25—Iraq.—Iraqi State Railways for electrically-operated AUTOMATIC LEVEL CROSSING RELEASERS AND BELL RINGING SIGNALS for seven level crossings. Tenders to the Director-General, Iraqi State Railways, Baghdad. (ESB/25489/59.)

November 25—India.—Kerala State Electricity Board for six QUARRY SHOVELS and one 49-45 ton capacity ARTICULATED ROCK CARRIER. Photocopies of tender documents from Export Services Branch, B.O.T., price 9s. (ESB/24333/59.)

November 27—Union of South Africa.—South African Railways for 73 JACKS ranging in capacity from 15 to 50 tons. Photocopies of tender documents from Export Services Branch, B.O.T., price 20s. (ESB/25780/59.)

November 30—India.—Northern Railway for provision of a POWER SIGNALLING SCHEME at Delhi Main Station. Tender forms and drawings obtainable from Chief Signal and Telecommunications Engineer, Northern Railway, Baroda House, New Delhi. Price Rs 10. (ESB/26160/59.)

Export Opportunity—Syria.—Mr. Mohamed Yuthub, chief engineer of the Syrian Region Ministry of Municipal and Rural Affairs, Port Said Street, Damascus, would like to receive quotations for 6 cwt. yd. TIPPING LORRIES, REFUSE-COLLECTING VEHICLES, SPRINKLER VEHICLES, a 3-ton MOBILE CRANE and an EXCAVATOR SHOVEL. (ESB/24017/59.)

SHIPPING AND SHIPBUILDING

Anglo-American Formation

BUILDING costs in British and overseas yards were compared in London this week in the course of an announcement by Mr. Erling D. Naess and Lord Melchett of the formation of an Anglo-American Shipping Co., Limited, registered in Bermuda. The new company, which will be American controlled, has been registered in Bermuda to meet the tax liability position of two U.S. institutions participating, but the crews, it was promised, would be British. Anglo-American will be operating five bulk carriers by 1962. Orders have been placed with the Japanese Mitsubishi yard for two 87,500-ton tankers—the largest to sail under the British flag. Mr. Naess cited costs for a 45,000-ton tanker as £51 per ton from a British yard, £48 per ton from Sweden and £45 per ton from Japan. He would order from British yards only if they were competitive. Japan also was offering favourable credit terms.

Newcastle Drops Handling Clause

STRONG opposition from port labour employers has led Newcastle upon Tyne Corporation Trade and Commerce Committee to recommend to the council withdrawal of sought-for Parliamentary powers giving the Corporation exclusive rights in discharging and loading all vessels at the Quay, and for provision of all cargo handling equipment and labour. A delegation of employers said that Newcastle had sufficient powers on the Quay at the moment. One of the reasons for the proposed Parliamentary clause is that the Corporation has invested £350,000 in 18 mobile cranes and did not want to see them standing idle. The committee also considered the exemption of coastal shipping from the proposal to increase dues and charges at the Quay by 20 per cent.

Air Conditioning Aboard "Oriana"

FULL air conditioning, designed and installed by Thermotank, Limited, is featured in the new Orient Line ship *Oriana*, launched at Barrow-in-Furness on November 3. A notable point is that individual controls are to be provided in each cabin. In first-class and officers' cabins the controls govern the temperature of the conditioned air, a simple movement of a bulkhead indicator altering the setting of a thermostat which, in turn, actuates a valve controlling the supply of warm water to a reheat in the branch duct supplying air to the particular cabin. If the passenger sets his indicator to maximum cooling, the valve shuts off the supply of warm water and the conditioned air enters the cabin at the lowest temperature that the system provides. The tourist cabins and crew accommodation are divided for air conditioning purposes into a number of zones according to their situation in the liner. The central refrigerating plant has a capacity of 22 million B.Th.U.s per hr.

Fixed Time Contract for Alterations

MODIFICATIONS to the passenger accommodation in the 18,000-ton liner *Bloemfontein Castle*, recently sold by the Union-Castle Line to the National Greek Australian Line, are to be carried

ried out by Smith's Dock Co., Limited, at North Shields. The work, which was secured in the face of strong competition, particularly from Italy, has to be carried out within 14 days. The *Bloemfontein Castle* completed her last voyage under the Union-Castle house flag at Tilbury on Monday this week. The Greek line is to operate between the Mediterranean and Australia next month.

FINANCIAL RESULTS

NOTES on the trading results, dividends and financial provisions of companies associated with the transport industry are contained in this feature, together with details of share issues, acquisitions and company formations or reorganisations.

Heenan Group

An ordinary dividend of 15 (10) per cent is to be distributed by the Heenan Group, Limited, for the year ended August 31 out of group net profits £298,880, after tax. No profit is included from the former subsidiary, W.G. Bagnall, Limited, which was sold during the year. The capital loss on realisation, £26,401, has been met out of capital and general reserves.

British Motor Corporation

Group profits of the British Motor Corporation, Limited, for the year ended July 31 were £200,468 (£24,549,299). To this was added depreciation for depreciation and subsidiary arising from sale of fixed assets of £290,256 (nil), and change in book value of annual charge of £344,508 (nil). Depreciation absorbs £4,684,094 (£23,833,439), and United Kingdom tax £2,392,567 (£11,459,650), leaving group net profits lower at £7,863,598 against £9,236,150. It is recalled that there was an unprecedented development of new models during the period under review.

KELVIN HALL

(Continued from page 19)

pany's maximum-weight range is completed by the new three-axle Mastiff Super Freighter for 20 tons gross weight (description and road test report in our last issue), which is available in the outside park for demonstration. The Sturdy eight-wheeler on the stand typifies the excellence of this model, which has the Thornycroft 139-b.h.p. diesel engine, air-pressure brakes on all wheels and power-assisted steering as standard equipment. The vehicle on show has the optional six-speed (overdrive) gearbox, double-drive balance-beam bogie, and a 24-ft. platform and headboard by Douglas Monro.

The Mastiff on the stand, which features the Thornycroft 7.88-litre diesel engine of 109 (net) b.h.p. and has a wheelbase of 14 ft. 6 in., is also bodied by Douglas Monro for a repeat order by Loudon and Russell, Limited, having a 19-ft. platform with low tailboard and high headboard incorporating a chain and turnbuckle support. The third vehicle on show is the Swiftsure for 6-ton loads, which is powered by the Thornycroft 4.18-litre diesel developing 80 (net) horsepower at 2,600 r.p.m. and has a 17-ft. platform body built by Andrew Fleming for Malcolm Drummond.

A Trojan 25-cwt. van is shown by James Bowen and Sons, Limited, on Stand 118. Volkswagen 15-cwt. vans and pick-ups are exhibited on Stand 100 by Croall and Croall and on Stand 103 by Cameron and Campbell, Limited.

LUNK?

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Well, as someone once said, 'it all depends on what you mean by better'. On present showing no Lunik has anything like the life of a Leyland which is 15-20 years or more. And, of course, Leylands travel farther. To them a mere 238,857 miles unbroken running is very small beer. Then, they certainly cost less on fuel—less than any other truck for that matter, let alone a Lunik. And they definitely carry more weight—right to the summit. But perhaps the most important difference of all is that Leylands are down to earth. No frills about them... no flights of fancy. They're just tough, punchy, dependable trucks—craftsmen-built by an organisation which has specialised in the manufacture of commercial vehicles and buses for over sixty years. To sum up. We don't know if a Leyland is better than a Lunik. We don't really give a bleep. But we do know that there is *nothing* better than a Leyland. And you'll agree once you've used them.

The following models will be shown on the Leyland stand.

COMET CS1 This new 12-ton g.v.w. Comet range—consisting of three haulage models suitable for body lengths up to 20' 6", two tractors and a tipper—is so improved in specification as to be virtually a new model—and the price is as low as ever.

SUPER COMET A 14-ton g.v.w. chassis to carry 9-ton loads over heavy going... with extra engine power for high mileages at low fuel cost... 5-speed gearbox with optional over-drive... diaphragm-operated air brakes... hub reduction rear axle.

OCTOPUS The 24-ton g.v.w. Octopus with its powerful Leyland 2.8 litre engine has earned a high reputation for maximum-capacity truck-road transport. Now available with single drive, double reduction rear axle.

STAND 114 SCOTTISH MOTOR SHOW

Still the demand for Leyland buses outstrips all others.

Today 78% of the British municipalities and more than 30 foreign capitals use Leylands.

At home the mainstay of the municipal fleet is still the Titan, but more and more urban services are cutting costs and speeding schedules by switching to the revolutionary-design Atlantean.

In the single deck field, whilst the Tiger Cub still ranks as the top-profit money spinner on both bus and coach work, and the Worldmaster continues its all-conquering way through five continents, Leyland introduces another chassis—the Leyland Leopard. This latest addition is a low-weight chassis powered by the famous 600 type engine. A chassis with a very lively performance designed for performing heavy city service at low cost or for high speed luxury touring.

(Top) No less than twenty-six municipalities and bus companies have already ordered the Leyland Atlantean. Features include: driver-controlled front entrance doors, single-step front-loading platform, 125 h.p. rear-mounted engine and semi or fully automatic gear change. Available as a 73-seater (unladen height 13' 4") or 78-seater (unladen height 14' 4").

(Bottom) The new Leyland Leopard, a low-weight chassis packed with extra power for high speed touring. Economical 6.00 125 h.p. diesel gives car-like acceleration... 2-speed rear axle ensures high average speeds on open roads with excellent performance on hilly routes. High power-weight ratio with a chassis weight of 4½ tons and g.v.w. rating of 11 tons.



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